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WALL STREET PAYS

through the nose to try to get Internet trading up to speed with online rivals. Page 40

SPECIAL REPORT

Y2K-UNREADY

Surprise! Some contingency plans may not survive the problems they were meant to address. Page 50

CISCO BUYING SPREE

A full-page guide to the networking giant's acquisition and investment strategy. Page 20

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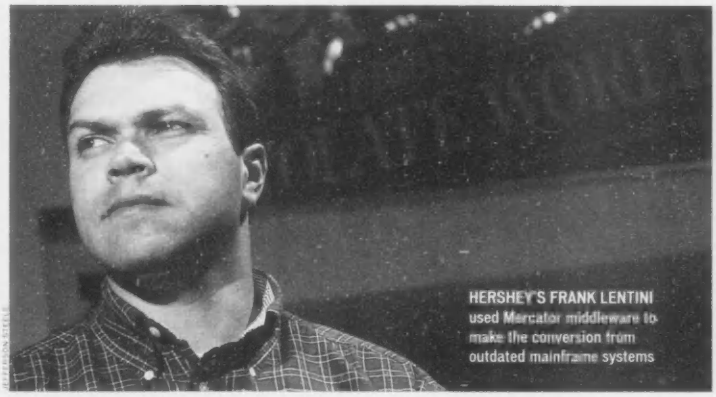

JEFFERSON STEELE

HERSHEY'S FRANK LENTINI used Mercator middleware to make the conversion from outdated mainframe systems

SUPER GLUE

COMPANIES ARE RUSHING to link e-commerce applications with legacy systems and to blend the hodgepodge of systems inherited from the latest business mergers. One study says an astonishing 45% of the average IT budget is spent on application integration, including lots of tedious programming. So it's no wonder enterprise application integration software is touted as a way to speed up the process and cut labor costs. The nascent EAI field is plagued by vendor hype, but there's good news: Users say the software really works.

Report begins on page 74.

MORE ERP HELP ON TAP AT ORACLE

At user show, Oracle execs pledge shorter waits for bug fixes and service calls in ongoing effort

BY CRAIG STEDMAN
ORLANDO

Five months ago, Oracle Corp. promised big improvements in technical support for its ERP users. Last week, Oracle executives said they now plan even more changes to try to make the support process less frustrating and time-consuming.

Support problems, such as long telephone hold times and lengthy waits for bug fixes, have bedeviled many users of Oracle's enterprise resource planning applications. Oracle had trouble hiring enough people to keep up with the support workload, and customer satisfaction ratings for the applications support group

Oracle Help, page 93

More to Come

Oracle support plans include:

SWITCHING all of its application users to a new online support system by the end of this month

INCREASING the amount of information about bug fixes posted online

IMPROVING the content of the online data so users can resolve more issues without calling Oracle

REPLACING the online system with more advanced software next summer

BIG IRON LOSES ITS LONGTIME GUIDE

Large-system user group closes shop

BY JAIKUMAR VIJAYAN

A vestige of the Big Iron era has quietly passed on.

Last month, Guide International Corp. formally closed shop after serving for more than 40 years as an influential user group for the large-system community.

The dissolution was forced by the falling attendance at traditional Guide conferences to the point "where they were no longer financially viable to run," said Guide President Ronald W. Higgin in a farewell letter posted on the erstwhile group's Web site (*www.guide.org*).

Share Inc., a rival user group that is mainly focused on large-system technology issues, will now assume ownership of Guide's Software License Use Management project, an ambitious effort to get vendors to adopt cheaper usage-based licensing models for large-system software. Share, which also was established more than 40 years ago, will waive its usual membership fee to former Guide members who choose to join Share by year's end.

Guide's Sept. 10 closure

Big Iron, page 16

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SERVICE DEBUTS: IT AT $165/USER

Start-up to begin flat-fee model with PCs, LANs

BY JULIA KING

OUTSOURCING

Sheldon Laube is on a mission to rid small and medium-size businesses of the task of buying and upgrading PCs and networks.

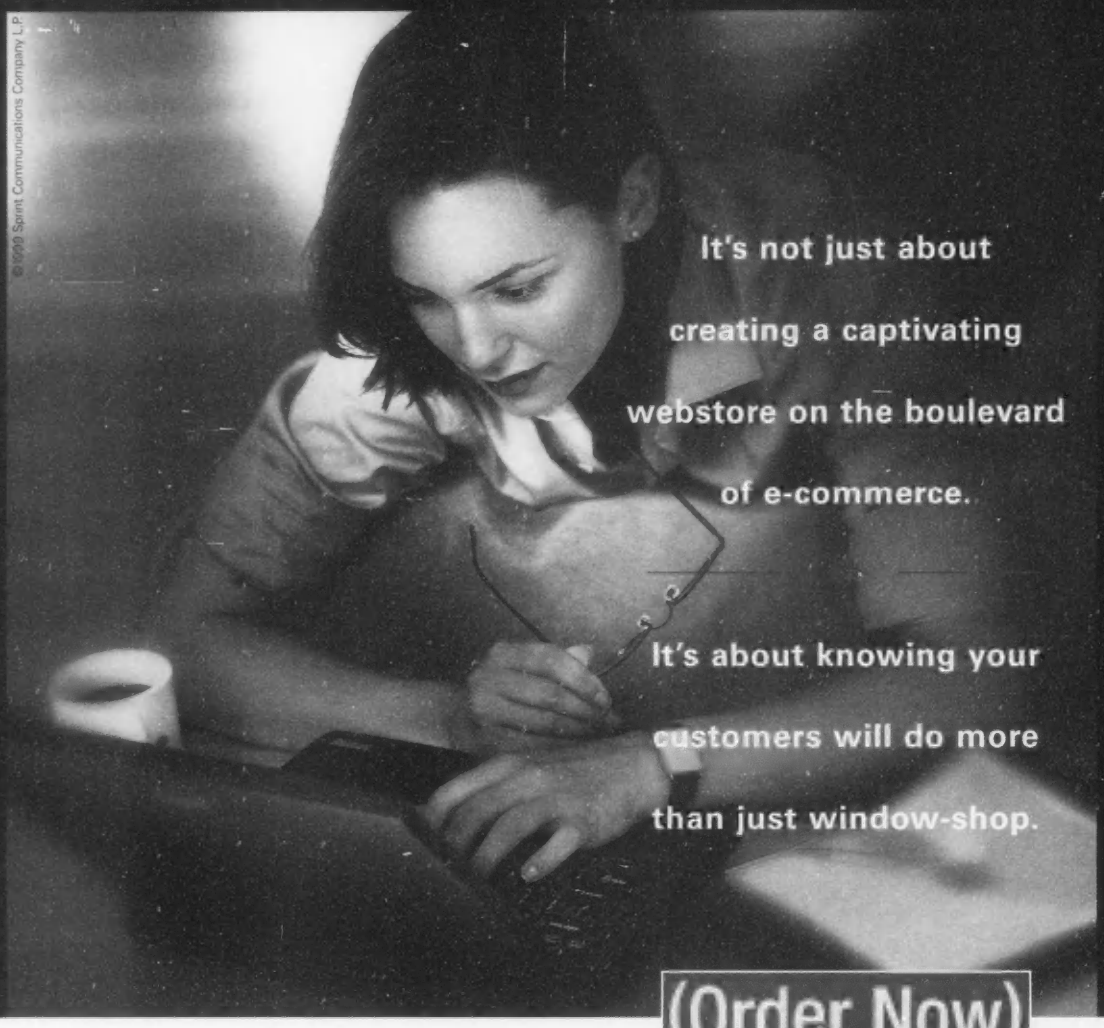
Eventually, he would like to do the same at big companies, too.

How? By making the price of farming it out almost too good to be true.

Starting next week, Laube's new company, CenterBeam Inc. in Santa Clara, Calif., will provide companies with a complete, Internet-enabled computing infrastructure — from PCs, LAN connections and printers to full-blown enterprise data center services — plus around-the-clock technical support, for a monthly fee of $165 per user.

"Through all my years in technology, I've been increasingly frustrated that technology doesn't work very well. Printers don't print, and computers crash," said Laube, former chief technology officer at Novell Inc. "The big difference here is we want to get busi-

Service Debuts, page 93



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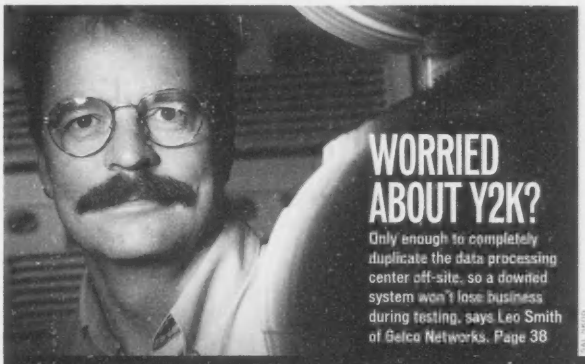

WORRIED ABOUT Y2K?

Only enough to completely duplicate the data processing center off-site, so a downed system won't lose business during testing, says Leo Smith of Gelco Networks. Page 38

DESPERATE FOR WEBSTERS

E-business and Web jobs come with six-figure salaries and good raises. Our survey shows where demand is highest. Page 56

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6 SUN OPENS Solaris source code in Linux-like strategy, but keeps control of user enhancements.

8 AIRLINES FOGGY on Y2K readiness, especially small and overseas carriers. FAA may ground those who don't report.

10 BUGS PLAGUE INTEL Pentium III in eight-way servers; most users unaffected.

12 WELLS FARGO eyes IT as a way to recruit and retain staff, not just to ease paperwork.

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46 MONEY MATTERS MORE to those who push knowledge management than does the actual husbanding of information, Paul Strassman charges.

46 RETENTION REQUIRES more than just pay and bonuses, as family-friendly workplaces proliferate.

50 FINAL PREPARATIONS for Y2K will be vital until the end of the year. Backups need backups, and Y2K consultants will be plenty busy, as midnight deadline stretches to 24 hours.

56 WIRED? HIRED. *Computerworld*'s quarterly hiring survey finds e-commerce jobs are the hardest, and most expensive, to fill.

60 CAREER ADVISER shows one supplicant how to get back to work in management after a two-year illness.

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68 EUROPEAN OFFICIALS probe the prices and conditions telecom carriers set for leased-line access.

69 THE BOSTON STOCK Exchange upgrades its infrastructure before decimal pricing starts to boost network demand.

QUICKSTUDY

72 ENTERPRISE application integration simply means linking applications so they can work together. But making it happen is far more complicated.

74 ENTERPRISE APP integration is the hot topic, but there are no off-the-shelf ways to make it work.

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78 1988: MORRIS WORM changes perception of the Net, bringing down 10% to 20% of the computers attached to it.

REGIONAL SCOPE

80 JOBS ARE HOT, though the winters are cold, in Rochester, Syracuse, Albany and Buffalo.

IF YOU HAD SOMEONE SHOOT A MISSILE THROUGH YOUR TANKS, YOU'D HAVE A QUICK RELEASE OF A LARGE QUANTITY [OF DEADLY CHEMICALS].

GEORGE KING, PROCESS SAFETY EXPERT, DOW CHEMICAL CO., COMMENTING ON WORST-CASE DISASTER SCENARIOS THE EPA POSTED FOR CHEMICAL COMPANIES AND THE NON-Y2K-RELATED FACTORS (LIKE TERRORISTS) THAT COULD ALSO CAUSE PROBLEMS.

SEE PAGE 38.

AT DEADLINE

UPS Gives Web Links To Customers

United Parcel Service of America Inc. today is slated to announce plans to offer its 1.7 million customers free Internet access to its Web site. UPS said it plans to partner with major Internet service providers to offer all its customers a no-cost way to connect to *www.ups.com*.

Chemical Plants to Close for Y2K

Several chemical makers, including Du Pont Co., Union Carbide Co. and Rhone-Poulenc, have decided to halt production during the changeover to the new year to avoid any potential year 2000 problems.

France's Rhone-Poulenc, for example, has decided to shut down during that period plants that use hazardous materials.

Ex-Compaq CEO Lands at Intershop

Online commerce software vendor Intershop AG appointed former Compaq Computer Corp. chief executive Eckhard Pfeiffer to its supervisory board. Intershop, based in Jena, Germany, and San Francisco, said it expects to elect Pfeiffer as chairman of its board.

Pfeiffer was ousted in April as head of Compaq in the wake of disappointing financial results.

Businesses Won't Ban New Year's Trips

Less than half of corporate travel managers plan to discourage international travel between late December and early January, when Y2K glitches could disrupt travel plans. But executives plan to closely track the whereabouts of traveling employees, according to a survey by the Business Travel Coalition.

Some 72% of 50 respondents said they intend to track travelers' locations and keep track of problems in the regions where they're located. But most of the respondents – 96% – said plans weren't finalized.

Amazon Opens Site to Online Mall

As broker for others' wares, service at issue

BY CAROL SLIWA

ELECTRONIC retailing giant Amazon.com Inc. made a big splash last week when it launched its zShops online marketplace with more than 500,000 unique items.

The Seattle-based retailer allows other merchants to offer their wares on its site for 10 cents per item or a monthly fee of $9.99 for 3,000 items. But several major online retailers said they won't rush to join the fray, and they don't view the new Amazon.com mall as a threat.

Carl Rosendorf, senior vice president of marketing at Barnesandnoble.com LLC, said Amazon's new initiative further differentiates his company from its chief rival. "It's more a competitive threat to the large online portal sites with search engines," he said.

Santa Clara, Calif.-based Yahoo Inc., Andover, Mass.-based CMGI Inc.'s AltaVista unit, American Online Inc. and Microsoft Corp. are among the companies that operate online malls through the hub sites consumers use as starting points to find information on the Web. But as a pure retailer, Amazon.com hopes to be able to draw more customers to shop.

At zShops, shoppers search for products — not merchants — through the company's specialized engine. Typing in the words *hiking boots*, for instance, produces a list of the kinds of boots available. Only after shoppers click on a particular boot do they find out who's selling it.

"I think what they've done is build a very effective classified ad section, and that's great," said Matt Hyde, vice president of online sales at Recreational Equipment Inc. in Kent, Wash. "But we're really about content, community and helping people through a process. [The Amazon.com mall] doesn't really provide that."

Hyde said he tried Amazon's zShops, buying a CD from a retailer called Duffle Bag. He said he received a confirmation message that told him he had 72 hours to arrange payment and delivery with the merchant either by telephone or e-mail.

However, merchants can elect to use Amazon.com's 1-Click payment feature, which lets prior Amazon.com customers make purchases using their credit card and information that's stored in Amazon.com's database. Merchants choosing that option pay a fee of 60 cents per transaction, plus 4.75% of the final sale.

"It's still to be determined if the customer wants to buy everything in the world under one site or if they're going to have favorites for different things," said Ken Young, director of communications at 1-800-Flowers.com in Westbury, N.Y. "Our focus is to try to expand our product line but not try to be everything to every customer."

Knocking Down the Walls

David Baltaxe, an analyst at Current Analysis Inc. in Sterling, Va., said he thinks Amazon.com may be preparing for Bentonville, Ark.-based Wal-Mart Stores Inc.'s much-anticipated launch into the online marketplace. "Amazon's making some moves now to protect itself. It's knocking down the walls of its proprietary store. That's fairly dramatic for the company."

Amazon.com gains the benefit of being able to provide more and diverse product lines without building warehouses and managing order fulfillment, Baltaxe said.

After-Hours Trading Stumbles

Nasdaq plan on hold pending SEC nod

BY THOMAS HOFFMAN

The infantile marketplace for after-hours stock trading stumbled like a 1-year-old last week in its latest steps to becoming a more mature environment.

The Nasdaq Stock Market Inc. last week postponed until Oct. 11 plans to allow its pricing systems to run beyond its normal 4 p.m. (Eastern Standard Time) closing as it awaited approval from the Securities and Exchange Commission (SEC).

The SEC has been questioning which of Nasdaq's rules that govern how and when trades are executed by broker/dealers might be affected by running its systems after hours, said a Nasdaq spokesman.

But the delay in Nasdaq listing prices for certain stocks that are traded after hours is only a temporary hitch as the all-electronic stock exchange works through some last-minute details with the SEC, said the Nasdaq spokesman. In addition, Nasdaq prefers to give its members a full week's notice about any changes to give them enough time to make any needed adjustments to their trading systems.

The after-hours trading market did pick up another endorsement last week when the chief of Merrill Lynch & Co.'s brokerage unit said the company would offer extended trading hours to its 5 million brokerage customers next year. Merrill Lynch's announcement came two weeks after the New York-based firm bought a 14.3% stake in Archipelago LLC, an electronic communications network in New York that plans to offer after-hours trading to institutional investors.

Nevertheless, traditional brokerages like Merrill Lynch face several technical and managerial challenges. With trading volumes still low after 4 p.m., brokers who take stock orders "don't stick around after hours, so getting those orders will be difficult," said Larry Tabb, an analyst at TowerGroup, a Needham, Mass.-based financial services consultant.

To generate those orders, brokerages that offer online trading will have to connect them to partner electronic communications networks, Tabb said. And even then, brokerages will have to decide whether there's enough volume to make their investments worthwhile, added Tabb.

Fiber Cut Disrupts Net Service

BY KATHLEEN OHLSON

A fiber-optic cut in the Cleveland area disrupted traffic on data networks connecting the East and West coasts for nearly 12 hours last week.

GTE Internetworking's Internet service was impacted by the cut, which occurred Wednesday at 11:45 a.m. EDT when a backhoe used by an unidentified gas company hit a service line, said Vaughn Harring, a spokesman for the Burlington, Mass.-based Internet service provider.

Harring said the outage caused the company to reroute traffic, which loaded other networks and slowed down service. Customers were informed hourly about the repair process, he said. Repairs were finished at 10 p.m. EDT.

Richard Zebro, a systems development director at Applied Information Services Inc. in Somerset, N.J., said the technology product and services company didn't have access to Internet mail or the Web and customers weren't able to access the company's site. In addition, the company couldn't conduct hosting for its customers and manage its domain name service, he said.

"In one sense, I'm ticked off that Qwest didn't have another way of routing their traffic," he said. He said he never heard from Qwest about what was going on. Qwest hadn't return phone calls by press time.

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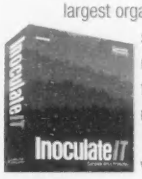

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Intel Joins E-Services Fray With Web Hosting Launch

Using its own hardware, chip giant expects to spend $1 billion on global data centers

BY SAMI LAIS

With its launch last week of Intel Online Services, Intel Corp. is striking out in a new direction: e-commerce Web hosting services that run — for the most part — on their own hardware.

Spending what spokesman predicted would be $1 billion on infrastructure, Intel plans to establish 12 data centers worldwide. The first two, in Folsom and Santa Clara, Calif., will be followed by others early next year in Fairfax County, Va.; by midyear in London and Tokyo; and by year's end in seven other locations, Intel said.

To win customers, Intel is offering to guarantee that everything will work — an offer that eHobbies in Santa Monica, Calif., couldn't refuse.

EHobbies was working with e-commerce application provider Pandesic LLC in Sunnyvale, Calif., to develop a full-service, all-online hobby shop that will be launched later this month when Intel announces plans for Intel Online.

Although more-established providers were too busy to meet with him, said Brent Cohen, eHobbies chief operating officer, "Intel made it clear they wanted to do business with us."

EHobbies is renting Intel boxes, hardware, space, monitoring services and, perhaps most important, expertise, Cohen said. "Basically, we're renting their hands [around the clock]," he said.

The center Intel is planning to set up in northern Virginia — in an area that is becoming known as Internet Alley U.S.A. — will put the company in the thick of the competition with service providers such as MCI WorldCom Inc. and Herndon, Va.-based PSInet Inc., which have their own Web-hosting facilities, said Michael Howard, an analyst at Infonetics Research Inc. in San Jose.

And by branching out from supplying processors and network interface cards to "now making the whole computer and offering services, they're competing in a roundabout way with some of their best customers," he said. Compaq Computer Corp., for instance, provides servers for Web-hosting companies.

One analyst said Intel, like Cisco Systems Inc. before it, is showing the possibilities of its equipment rather than just telling people about it.

Cisco made sophisticated equipment, but many of its customers didn't know how to take advantage of it, said Tam Dell'Oro, an analyst at Dell'Oro Group in Portola Valley, Calif. "So Cisco built a staff to show customers how to use it."

Sun Opens Solaris Code

BY JAIKUMAR VIJAYAN AND DAVID ORENSTEIN

Sun Microsystems Inc. is making its Solaris operating system source code publicly available to developers under its "community-source license" program, in a move apparently aimed at mimicking the success of Linux.

Under Sun's program, developers and users can download Solaris source code for free and make changes to the operating system as long as all the changes are reported back to Sun. Developers will still have to pay license fees to Sun if they decide to use any Solaris code in commercial products.

No Immediate Changes

This means that most users are unlikely to see any immediate changes in the way they acquire or pay for Solaris products, observers said.

But the move could be useful to a small number of companies that may occasionally need to make changes at a source-code level, said Rex Hays, a design engineer in the advanced development product group at Eastman Kodak Co. in Rochester, N.Y.

For example, Kodak in the past has paid Sun for access to Solaris source code when embedding the operating system into some of its products. Giving it away for free "would be a very nice thing," Hays said. "But it would be interesting to see how much of the source they give away," because in the past, Sun has always held back some code under its source licensing program, he said.

Sun may be trying to capitalize on the growing developer interest around non-Microsoft Corp. technologies such as Linux and Java, said Laurie McCabe, an analyst at Summit Strategies Inc. in Boston. "The whole developer community was going the Microsoft way until Linux and Java came along," McCabe said. "This is another of those attempts by Sun to shake up the old status quo," she said.

Others were more skeptical. Stacey Quandt at Giga Information Group Inc. in Cambridge, Mass. said open-source developers aren't likely to rally around Solaris because it is still a proprietary.

Deal Gets USWeb/CKS to Use Win 2000

Microsoft invests in e-commerce services

BY DAVID ORENSTEIN

USWeb/CKS announced last week a $90 million deal that will standardize its application and information technology service offerings on Microsoft Corp.'s platform.

Analysts said the need to develop e-commerce applications for users will quickly force service firms such as USWeb/CKS to select an efficient infrastructure.

For Microsoft's investment, USWeb/CKS will develop, host and manage custom e-commerce, knowledge management, customer-relationship management and back-office applications based on a software infrastructure called iFrame built atop Microsoft's Digital Internet Architecture (DNA) 2000.

Announced Sept. 13, DNA 2000 uses the increased reliability and scalability that Microsoft said it has built in to Windows 2000 and on the ubiquity of Extensible Markup Language, which Microsoft and many observers say will become a data interchange standard on the Web. IFrame is a set of services that provide directory, security, networking and management support for the custom applications that would be built on top.

By basing virtually all its application development and implementation on the same infrastructure, USWeb/CKS will deliver custom applications to customers more quickly and manage them more efficiently, said Alex Hawkinson, USWeb/CKS's senior vice president of managed services.

Analyst Meredith Whalen at International Data Corp. in Framingham, Mass., said that ultimately service vendors will have to choose one family of technologies because customers will place too high a priority on speed to market.

But analyst Mike Gilpin at Giga Information Group Inc. in Cambridge, Mass., said he questions whether Microsoft technology is the most efficient choice. Although Windows servers are relatively inexpensive, more of them are needed to achieve the throughput levels attainable by Java applications on high-end Unix systems. Also, Windows hasn't proved to be as reliable as some other systems, he said.

Eventually, the low cost of Microsoft-centered platforms could be overcome by the greater complexity of managing them, Gilpin said.

DNA 2000, however, is based on Windows 2000, which Microsoft has designed to be more stable and scalable than Windows NT 4.0. But many of the Microsoft products that provide the foundation for DNA 2000, including Windows 2000, are in beta.

Although the technology is new now, John Fairbank, IT manager at insurance industry publisher National Underwriter Co. in Cincinnati, said he will look into USWeb/CKS's services because they may be able to help his company's nascent e-commerce efforts. The firm hopes to conduct subscription-order processing and eventually sell its products directly over the Web.

USWeb/CKS expects to begin offering services before the year's end. But Brian Winter, vice president of service development, said the first full implementations for customers probably won't occur before the second half of next year.

Web Cash

Microsoft will give USWeb/CKS $90M as part of a partnership announced last week. Here's where the money will go:

- $67.5M to fund USWeb/CKS's efforts to develop a software architecture, triple its data center space and buy additional network services and capacity
- $8M to fund efforts to market the services and train 750 consultants. The companies will also establish a joint development lab in Redmond, Wash.
- $15M to buy USWeb/CKS's stock warrants

Note: After 18 months, Microsoft will earn royalties on USWeb's service revenue.

SOURCE: USWEB/CKS AND MICROSOFT CORP.

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BRIEFS

DOE Says Congress Cuts Security Funds

The U.S. Department of Energy, plagued by a spy scandal, isn't getting the help it needs from Congress to develop a real-time intrusion-detection system, Energy Secretary Bill Richardson said last week. He charged that the fiscal 2000 budget in Congress has killed $35 million in needed computer security funding.

Stone Exits Novell

Christopher Stone is leaving his post as Novell Inc.'s senior vice president of strategy and corporate development to found an Internet start-up company focused on producing directory-enabled applications for business-to-business e-commerce. The new firm, Network Decisions, will be based in Concord, Mass.

CIA Forms Tech Firm

The CIA last week formed a nonprofit company to foster the development of technology for CIA missions. In-Q-It Inc., based in Washington, will function like a venture capital firm and initially focus on agency use of the Internet, information security and "knowledge generation." Gilman G. Louie, former chief creative officer at Hasbro Interactive Inc., is president and CEO of the independent company.

New Visa Services Unit

Credit-card association Visa International Inc. in San Francisco announced a reorganization that will place transaction processing systems within a new "shared services" organization. Visa appointed John Partridge president of the shared services unit. He was formerly the CIO at insurance provider Unum Corp. in Portland, Maine.

CSC Deal Extended

Computer Sciences Corp. last week announced a two-year extension to an information technology outsourcing contract with Hughes Electronics Corp. in El Segundo, Calif. The original seven-year agreement has been extended to December 2004. The extension is valued at approximately $60 million over two years.

DOT Stymied by Y2K

Tensions mount as agencies seek data from U.S., let alone international, airlines

BY PATRICK THIBODEAU
WASHINGTON

IT'S BECOMING increasingly apparent that business travelers are going to have to rely on the airlines and their own research in deciding whether it's safe to fly overseas at the end of the year. The government is having trouble getting the year 2000 answers it needs.

U.S. Department of Transportation (DOT) officials last week began providing country-by-country airline and airport Y2K information. But a check of the data shows that U.S. officials for the most part have "insufficient information" to say for sure whether it will be safe to use airports and airlines in certain nations.

This differs from what one major airline told the U.S. Congress last week. British Airways PLC has been conducting its own investigation and "does not believe that there will be an adverse effect" from Y2K in areas it flies to, said Peter Cooke, head of the year 2000 effort at the airline. Cooke testified before the Senate's Special Committee on the Year 2000 Technology Problem.

Silence Not Golden

Federal officials have a better idea of aviation readiness domestically, but even here they lack much information — and that's sparking some action in Congress.

On Tuesday, U.S. Sen. Christopher Dodd (D-Conn.) will release the names of domestic carriers that haven't responded to a U.S. Federal Aviation Administration Y2K readiness survey. He may follow that with legislation that would ground on Dec. 31 any airline that hasn't returned the FAA's survey by Nov. 15.

"Any airline that would not fill out a survey is telling me something, and I don't like what I'm hearing," said Dodd.

The FAA has sought year 2000 readiness information from 3,200 airlines and aviation manufacturers. Large airlines and companies have responded, but some 1,900 firms — many of them small airlines — haven't disclosed their readiness.

Kenneth Mead, the DOT's inspector general, called the lack of information from these airlines "unacceptable" but also said that the U.S. can't expect widespread cooperation overseas while it still has its "own house to clean."

Thomas Windmuller, director of the International Air Transport Association, a trade group representing airlines that handle 98% of all international traffic, said the Y2K problem may lead to some delays and cancellations, but these "inconveniences" should be no worse than a winter storm. ◗

Flier Beware

The DOT has identified the following destinations as ones where it knows little about the Y2K readiness of aviation systems:

Aruba	Netherlands Antilles
Cayman Islands	Paraguay
Czech Republic	Samoa
French Antilles	St. Kitts
French Polynesia	Tonga
Guadeloupe; Guyana	Trinidad and Tobago
Marshall Islands	Turks and Caicos
Martinique	Uruguay

SOURCE: U.S. DEPARTMENT OF TRANSPORTATION (WWW.FLY2K.DOT.GOV)

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Domain Deal Ends Impasse

But Whois directory ownership uncertain

BY PATRICK THIBODEAU
WASHINGTON

If stock price is an indication of success, Network Solutions Inc. (NSI) was the big winner last week in a three-way deal to settle a dispute over who will administer the Internet's domain name system.

Herndon, Va.-based NSI will continue to run the .com, .org and .net database for at least the next four years, according to NSI's agreement with the U.S. Department of Commerce and the Internet Corporation for Assigned Names and Numbers (ICANN). It will recognize ICANN, the nonprofit group formed to administer the domain name system, and will also pay $1.25 million to the financially struggling ICANN.

But because NSI will continue to maintain the central domain registry, acting as a kind of wholesaler, it will collect fees from other firms that register domain names for years to come. "It's an absolute home run [for NSI]," said Jim Pettit, an analyst at Hambrecht & Quist LLC in San Francisco. The company's stock price rose nearly $10 to $95 the day after the announcement.

But the agreement left some wondering if ICANN will truly have some authority over NSI.

"I would feel comfortable if ICANN can actually demonstrate that it has the ability to influence NSI," said Tom Baucom, the webmaster at Colorado Springs Utilities.

For corporations and others with a stake in the domain name system, this agreement may make it possible, after years of logjams, to add new top-level domains to compete with .com and .net, now that the administration dispute has been settled and ICANN's funding improved.

But the agreement left a key issue unresolved: ownership of the Whois directory, which contains domain name ownership information. NSI has asserted ownership in the past, and the agreement requires NSI to ensure open access to the data. Andy Pincus, the Commerce Department's general counsel, said "the critical question" in the deal was ensuring that the data was available for third parties to use.

"I smell compromise," said Donald M. Heath, president and CEO of the Internet Society, a Reston, Va.-based Internet policy organization. "It's clear, in my opinion, that the database should belong to the public."

The agreement will also reduce the wholesale domain name registration charge from $9 to $6.

NSI has had exclusive right to manage the domain name system since 1993 under a contract with the National Science Foundation. The new agreement will be up for ICANN ratification next month. ◗

MOREONLINE
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FAQ: Rules of the Domain Name Game

Questions and answers about last week's agreement among the U.S. Department of Commerce, the Internet Corporation for Assigned Names and Numbers (ICANN) and Network Solutions Inc. (NSI).

Who is in charge of the .com, .net, .org domain name system? NSI will still maintain the database but will now recognize ICANN's administrative authority. NSI will maintain the registry for at least four years but will gain an additional four years if it spins off ownership of its registry from its domain name registration business.

What happens to the Whois domain registry data? The agreement ensures access to the registry data and also includes provisions for bulk access to the data at a cost not to exceed $10,000. But ownership of that data wasn't resolved.

How will this impact domain name fees and terms? The amount NSI charges other registrars to add a domain will drop from $9 to $6 after Jan. 15. Annual registrations and renewals will also be allowed.

Continental Airlines Hires EDS to Handle $1.5B in Services

BY STEWART DECK

Continental Airlines Inc. officials announced an eight-year, $1.5 billion global services contract last week with Electronic Data Systems Corp. that covers network infrastructure, field services and ongoing development of reservation systems.

The airline won't outsource its entire information technology operation to Plano, Texas-based EDS. Instead, it will continue to manage its data warehouse and ticketing systems while counting on EDS's expertise in running data centers and managing network piping, said Janet Wejman, CIO at Houston-based Continental. "It will be a partnership of best skills," she added.

JANET WEJMAN: "It will be a partnership of best skills"

The airline is keeping the warehouse — used for fares and customer service analysis — in-house to allow its analysts and application developers closer access to it, Wejman said.

EDS will focus on developing Continental's reservation system, which is the centerpiece of the airline's plans for interairline electronic ticketing.

"We've had a relationship with EDS for several years," Wejman explained, "and working with someone who knows you well lets you focus on moving ahead, instead of just enhancing what you've been doing."

Interairline electronic tickets are an "obvious win for customers if they really pull it off," said Warren Powell, a professor of operations research at Princeton University in Princeton, N.J. In the past, airlines have been loath to establish many cross-airline data-sharing applications for fear of assisting competitors, but the industry may have evolved to a point where this has become possible, Powell said.

"Railroads routinely share data with each other, and we may start seeing more of that with airlines, now that competition for core hubs has mostly been settled," Powell said.

Martin Godly, a consultant at Applied Business Sciences LLC in Little Silver, N.J., explained that reservation systems are quite integrated among airlines but that cross-airline ticketing has been "very limited."

"Airlines have been very careful about not sharing passenger information, and some substantial technical hurdles still need to be overcome to do so," said Godly. "Making the effort to establish partnerships with other airlines and starting to provide these services to customers should provide solid benefits for Continental."

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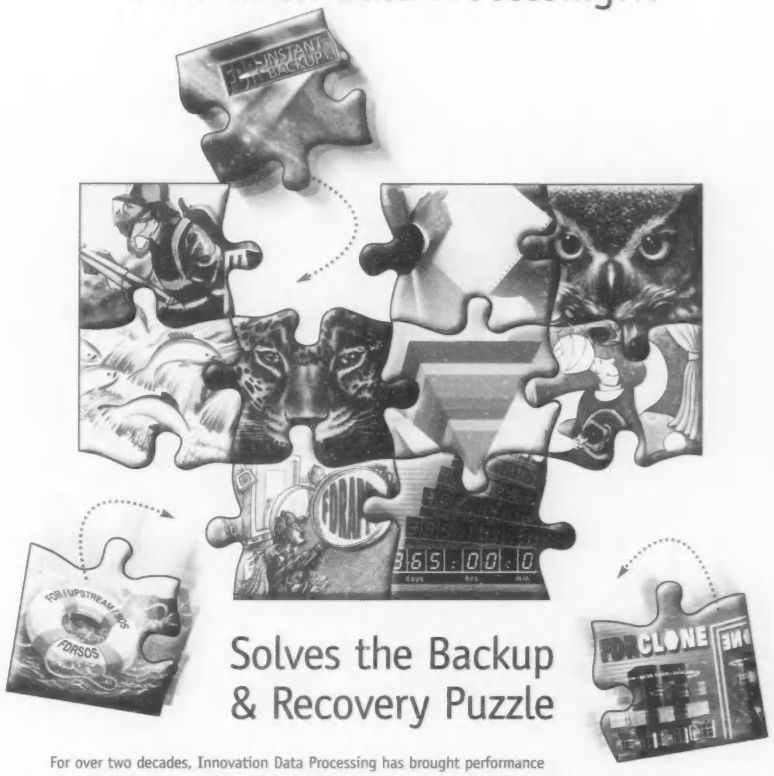

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Intel Trying to Find Cure for Xeon 550-MHz Processor Bug

BY STACY COLLETT

Intel Corp. officials said it could take three weeks to find the root cause of and remedy for a bug in its Pentium III Xeon 550-MHz processor. The bug affects the performance of some eight-way servers, but observers said the problem won't affect many business users.

So far Intel has found the bug in the Xeon 550-MHz processor when the processor communicates with an Intel Saber motherboard. The bug, discovered more than a week ago, makes the computer crash.

Officials said the problem appears to be excessive voltage, or "noise," on the processor when it's plugged into the Saber motherboard. But Intel said it will continue testing to determine if other components that work with the processor are affected.

The problem has been found in 550-MHz versions with 512K and 1M byte of secondary cache. Versions with 2M bytes of cache aren't affected, according to an Intel spokesman.

The Pentium III 550-MHz processors were first shipped Aug. 23, after months of delays.

IBM, Compaq Computer Corp., Hewlett-Packard Co. and Dell Computer Corp. are among the manufacturers that have come out with eight-way servers based on the product. But officials at the companies said they aren't concerned.

Limited Scope

A Compaq spokeswoman said the ProLiant 8000 and 8500 servers are unaffected because Compaq designs and manufactures its own eight-way server motherboard.

Dell will start shipping its PowerEdge eight-way servers this week. "We just aren't going to offer it with 1M byte until they figure out the problem," said David Brandt, a Dell spokesman.

IBM will ship its eight-way servers only with 2M bytes cache. An IBM spokesman called the number of existing eight-way users a "manageable pool" to maintain.

"They're getting into their early deployment. Problems don't crop up when processors aren't taxed. Those customers can continue to use those processors until we replace them," the IBM spokesman said.

Stephen Wolfcale, director of network operations at S-B Power Tool Co. in Chicago, has been beta-testing HP's eight-way server with 1M byte cache since May. "We haven't had any problems" related to the processor or motherboard, he said, though he acknowledged that he hasn't pushed the server to its highest performance level, where most of the crashes have occurred.

Intel said it will continue shipping the processors and recommend that users not use certain chips with Saber motherboards.

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E-Commerce Takes Center Stage in N.Y.

Apps for building, supporting sites will dominate this week's show

BY CAROL SLIWA

NEW SOFTWARE and tools that can assist companies in setting up e-commerce sites and marketplaces and the internal systems needed to support them will be in the spotlight at this week's Fall Internet World '99 show in New York.

Oracle Corp., one of the major vendors planning announcements, will unveil the Business Components for Java that it expects to ship this month, a company spokeswoman said. The reusable components, aimed to ease application development, will be released with the 3.0 upgrade of Oracle's JDeveloper tool.

INTERNET WORLD

"It's basically a software layer above the Oracle application server, which gives you a platform to build on so you don't have to worry about some of the low-level coding," said Phil Costa, an analyst at Giga Information Group Inc. in Cambridge, Mass.

A key driver for the Business Components initiative was Oracle's own software, said Giga analyst Carl Zetie. "Every time Oracle upgrades, customers have to go in and recustomize it all, and it's all code," Zetie said. "With something like this framework, that would be much easier."

An Oracle spokeswoman declined to disclose pricing.

Another database vendor, **Informix Corp.**, plans to announce its strategy for Extensible Markup Language (XML), which is widely viewed as a critical Web technology. Informix plans to incorporate XML as a native data type and upgrade its tools so that developers can build Web content using XML, which can help categorize information in more useful ways.

Other products to be announced this week at Internet World include the following:

■ **On-Link Technologies Inc.**'s new $150,000 Surveyor module for its Rainmaker Commerce Suite, software for setting up Web storefronts that let customers dictate the buying process.

The Surveyor module will let electronic retailers better capture customer session data so they can analyze the customer decision process. "Ultimately, what you want to be able to do is say why people bought certain things," said David Yockelson, an analyst at Meta Group Inc. in Stamford, Conn.

■ Lowell, Mass.-based **OrderTrust Inc.**'s Product MarketPlace service to help online merchants locate products they want to sell and load them into their site.

■ **Inprise Corp.**'s new WebCore application server, which supports some of the latest Java technology.

Scotts Valley, Calif.-based Inprise will also announce the 4.0 upgrade of its VisiBroker object request broker, which supports the 2.3 specification of the Common Object Request Broker Architecture, making for greater portability of applications.

WebCore and VisiBroker 4.0 are due to begin shipping this quarter. ◗

HR App Helps Bank Retain Workers During Merger

Wells Fargo tells of strategy at conference

BY JIM COPE
CHICAGO

Many attendees at last week's Chicago HR Technology Conference were smitten with how self-service transaction processing could lighten the paper load inherent in human resources administration. But some were looking at how IT can help with strategic issues, such as employee retention and transition.

Information technology has helped managers at Wells Fargo & Co. retain and develop its employees, according to Nancy Brown, a vice president. Brown said the bank sought additional resources to move employees to new assignments during the merger with Norwest Corp. last year.

Bank officials had three primary concerns, she said, that prompted them to look for a tool to keep workers during an awkward time: "How do we demonstrate management's commitment to team members? How do we retain team members whose jobs are eliminated? And how do we retain 'at-risk' team members, such as those working on Y2K?"

The bank settled on CareerSteps, a Web-based application from MindSteps Inc. in San Mateo, Calif., designed to boost retention and productivity. CareerSteps walks employees through a career assessment and generates a career development plan, Brown said. It was also designed to help identify what motivates workers and helps them enjoy their jobs. Only the employees have access to their information, but they are encouraged to share it with a supervisor.

Wells Fargo has applied this strategy in the bank's wholesale and credit administration group, where research suggested career development mechanisms were lacking.

The initial project involved 200 workers in the wholesale and credit group and was conducted just after the merger announcement, Brown said.

More than 95% of employees using the system rated it "good to excellent" for producing an effective development plan, and about 85% gave it similar marks for facilitating discussions with managers.

Giga Information Group Inc. analyst Jim Holincheck said such self-service human resources applications will become increasingly common. "This is now being pushed out to people who have the data," Holincheck said. ◗

Cope is a freelance writer in South Bend, Ind.

Microsoft Releases Web VBA

BY DAVID ORENSTEIN

Corporate users said access to Microsoft Corp.'s Visual Basic for Applications (VBA) language will help make applications easier for end users to program, but it isn't necessary to make applications flexible.

Microsoft released VBA, the language of Word macros, at *http://msdn.microsoft.com/vba*. Companies pay only when VBA-enabled applications are deployed, which costs between $23 and $30 per desktop, depending on how much Microsoft software a company owns, said VBA product manager Neil Charney.

Previous Licensing

VBA had previously been licensed to independent software vendors, but Charney said companies had requested VBA to develop a core application once, compile it and let business units or subsidiaries customize it themselves without altering the source code.

VBA includes the language and a tool that lets users make any application written to Microsoft's Component Object Model work with VBA.

Jamie Mangrum, operations manager at the California Department of General Services, said licensing VBA could help developers create a flexible application for internal department surveys. "We need a way to enable the office to build their own data-entry forms," Mangrum said. "I don't want my developers to be burdened with having to create new forms all of the time."

The $23-to-$30 cost on each of the department's 3,000 desktops would be covered by the savings in staff developers' time, he said. ◗

Netscape Server Upgraded

BY CAROL SLIWA

One of the more popular Web servers on the market — Netscape Communications Corp.'s Enterprise Server — is getting a new name and beefed-up Java support in the newly released 4.0 upgrade.

The upgraded server will be named iPlanet Web Server, Enterprise Edition 4.0. Sun Microsystems Inc. made a deal to co-develop and co-market Netscape products when America Online Inc. acquired Netscape.

The iPlanet Web Server is based on Netscape technology, but both Sun and Netscape worked on the new version, according to Sun-Netscape product marketing manager Rebecca Hansen. One of its major enhancements is support for Java Server Pages and servlets.

Giga Information Group Inc. analyst Phil Costa said Java support in Web servers is important because "Java's becoming a ubiquitous piece of the infrastructure."

The iPlanet servlet engine is plugged in to the server, which helps servlet performance.

The upgraded Web server also features the following:

■ Fail-over protection for Java tools using the multiprocess mode and support for remote debugging of Java applications.

■ A more intuitive management graphical user interface and Java servlet and virtual machine administrative tools.

The iPlanet 4.0 server, which sells for $1,495 per CPU, is available immediately. ◗

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BRIEFS

Number of Full-Time Telecommuters Rises

The number of telecommuters rose 30% to almost 7 million last year, according to InfoBeads, the market research arm of Ziff-Davis Corp. Although most of these people telecommute part time, the study found that the number of full-time telecommuters grew faster than the number of part-time telecommuters, rising 78% to 951,000.

Palm Cuts Prices

As expected, Palm Computing Inc., a division of 3Com Corp. in Santa Clara, Calif., will announce price reductions for its handheld computers today.

A new, clear-cased Palm IIIe special edition will be introduced at $179, while the gray Palm IIIe will drop from $229 to $179. The Palm IIIx will drop to $299, down from $369, and the price of the Palm V will drop to $369 from $449. The Palm VII wireless model will be priced at $499, down from $599.

Western Digital Recalls Faulty Drives

Disk maker Western Digital Corp. in Irvine, Calif., will recall 400,000 hard drives because company tests have uncovered a faulty internal chip. The recall covers the company's WD Caviar 6.8G byte per-platter desktop hard-disk series, with capacities ranging from 6.4G bytes to 20.5G bytes. The flaws are in disks built between Aug. 27 and Sept. 24, so most haven't yet been placed in computer systems.

Quake Gives Jolt To Memory Prices

The devastating earthquake in Taiwan sent already rising memory chip prices surging to new heights, with spot-market buyers in Asia and Europe hit especially hard. Although Taiwan is far from being a major memory chip power, the news that Taiwanese chip makers would be unable to produce anything for weeks was enough to cause a 50% hike in spot-market prices for the chips used for main memory in most of today's PCs.

Thin Clients to Run NT Embedded 4.0

Users unsure they need the performance

BY MATT HAMBLEN AND DAVID ORENSTEIN

Microsoft Corp. last week announced that the Windows NT Embedded 4.0 operating system will run on Windows terminals. But users and analysts aren't sure how valuable or successful the more powerful — and more costly — thin-client system will be.

Microsoft last week announced that the NT thin clients are coming from several vendors early next year and will provide higher performance than thin clients running Windows CE. The Windows-based Terminal Professional, a thin client running NT Embedded 4.0, will support the Internet Explorer 5.0 browser and streaming media, Microsoft said.

Meanwhile, Compaq Computer Corp. announced it will ship a line of thin clients later this month that run both "lite" versions of Windows as a way to give customers more choices. Details weren't announced.

Managers at companies using thin clients welcomed the news of more options, but they weren't sure how important NT will be in thin clients. "Having the latest [operating system] is always important, but I can't really see how multimedia would matter to us," said Diana Lorti, contract administrator at Phoenix-based Chambers Electronic Communications LLC. She said she needs more cost and functionality details to judge its efficiency.

The company had about 20 IBM Network Stations — thin clients with no bays or hard drives — installed about two years ago for use by project managers and accountants.

Dirk Drews, a manager at West Bend Mutual Insurance Co. in West Bend, Wis., said innovations in thin clients from Microsoft such as the NT operating system are potentially important as his company considers a thin-client approach for up to 600 independent agents.

"I don't think NT Embedded will do very well," partly because it's expected to be more expensive than Windows CE, said Kimball Brown, an analyst at Dataquest in San Jose. Actually, both NT Embedded and CE are "brain-dead," Brown said, because they compete against free operating systems.

Greg Blatnik, an analyst at Zona Research Inc. in Redwood City, Calif., also said NT Embedded will cost "sizably" more than CE because it's an advanced operating system compared with the "entry-level" CE, although cost figures aren't available. But Blatnik predicted that some users will want NT Embedded because they need the power to run a browser locally.

AT A GLANCE

Windows NT Embedded

12% of IT managers reported using the NT Embedded operating system somewhere in their organization.

SOURCE: SURVEY OF 103 IT MANAGERS USING WINDOWS, SEPT. 9, COMPUTERWORLD

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For resources on thin-client computing, visit our Web site.
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Rugged Devices Add Win CE

Change in system broadens reach of new handhelds

BY MATT HAMBLEN

The firm that created handheld bar-code scanners and an array of rugged handheld computers, often referred to as "guns" or "bricks," is branching out to produce three models that run on Windows CE.

Until now, Symbol Technologies Inc. used either a proprietary or Palm operating system.

Symbol's new PPT 2700 will most resemble other personal-organizer-size handhelds running CE or the Palm operating system, although it is resistant to damage from falls and all kinds of weather (see photo).

The Holtsville, N.Y., company's new CE models are the 7200 and 7500, gun and brick models starting at $3,995. The former is held like a gun and uses a touch screen and a scanner; the brick is an extra-rugged computer that can be operated with one hand.

The 2700's starting price of $1,325 might be several hundred dollars more expensive than nonrugged competitors running CE but will help expand the market for rugged handhelds beyond warehouses and more traditional settings, analysts predicted.

For example, at the Improv comedy club in Dallas, managers will soon carry 2700s to take drink orders from people waiting in line. The information will be relayed over Symbol's Spectrum24 wireless LAN to a terminal at the bar so that drinks will be waiting on tables when the customers arrive, said manager Trey Belew.

The handhelds will also be integrated with ticket sales so managers can resolve complaints about seating using the handhelds over the wireless LAN, rather than walk back to the office. A rugged machine makes more sense in a restaurant setting, he said.

"It will help customers relax more, and we think that's valuable," he said. Several other sister Improv clubs nationwide plan on using the devices. The handhelds are the first the club has used and will operate with fixed PCs, which are replacing a 10-year-old system that isn't year 2000 compliant.

In addition, the Department of Defense recently announced a five-year, $248 million purchase of Symbol handhelds running CE. And Qualcomm Inc. in San Diego is partnering with Symbol to install CE in tablet computers in long-haul trucks, using a satellite network to keep truckers in touch with fleet owners, officials said.

Windows CE is important for Symbol's growth because there are so many Windows development tools and developers available to build applications, analysts said.

The Palm operating system is four times more prevalent than CE, but because so many handhelds are based on DOS, it will be easier to convert devices from DOS to CE, said David Hayden, an analyst at Mobile Insights Inc. in Mountain View, Calif.

Jill House, an analyst at International Data Corp. in Framingham, Mass., said the price difference between rugged and nonrugged will still favor CE devices from vendors such as Compaq Computer Corp.

AT A GLANCE

PPT 2700

Company: Symbol Technologies Inc.

Single-item price: $1,325

Features: 12 oz., 7 in. long; Windows CE; supports 802.11 wireless LAN; 16M bytes of RAM; rugged enough to withstand a 4-ft. drop to concrete.

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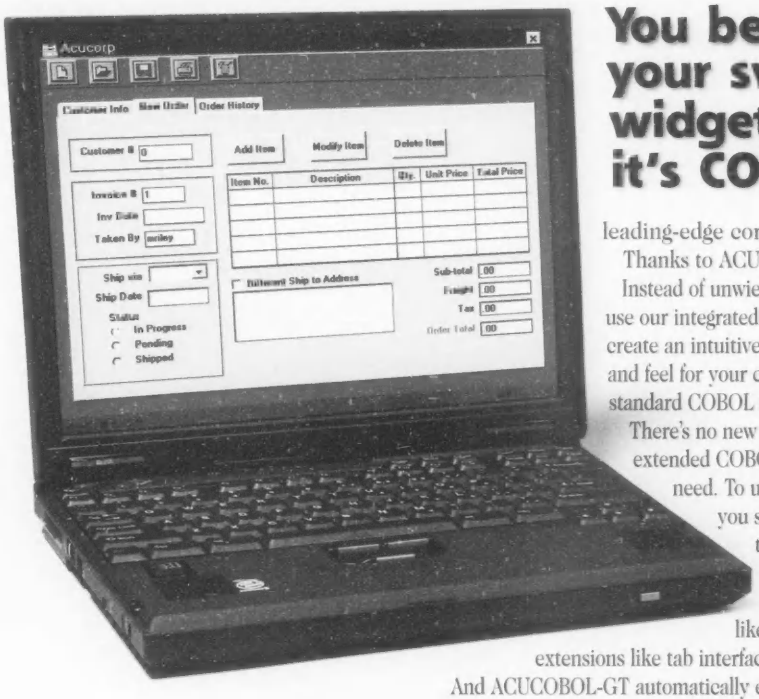

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First Techies Day To Target Youth

Organizers: It's never too early to tell teens about profession — or the labor shortage

BY JULEKHA DASH

INSTEAD OF WORKING at their computers, hundreds of technology workers at the Memphis headquarters of Federal Express Corp. will spend tomorrow trying to make technology look exciting to students as young as 5 years old.

For older students, employees will talk about job prospects in information technology, all as part of the first National Techies Day.

"We don't expect to find these people applying for a job the next day," said Rick Nordtvedt, managing director of the emerging technologies center at FedEx. "But we do realize that those [kids] will fulfill [technology] jobs over the next few years."

FedEx is just one of 500 organizations that will participate in the day, part of a long-term effort to address the IT labor shortage by making technology jobs look more attractive to the nation's youth.

Although Techies Day is hardly the first effort to heighten the profile of IT jobs, it's a chance to tell tomorrow's labor pool that the job market is ripe for technology-educated workers, said Nordtvedt. He added that the sooner kids are exposed to technology, the more likely they are to develop an interest in it and the "more likely they are to work at a place like FedEx."

By enlisting nontraditional IT workers, other Techies Day participants want to dispel the perception among teen-agers that technology jobs are limited to jobs like computer programming. For example, the U.S. Department of Commerce hopes to enlist a ship captain and a hurricane hunter who can demonstrate how they use technology to save lives.

According to the Commerce Department, the market will need as many as 1.4 million new skilled IT workers between now and 2006. It took almost the past 50 years to build a total labor force of that size, said Deputy Assistant Secretary Kelly Carnes. "That's the single biggest competitive challenge to the nation. We need [to deliver] innovative strategies for people to get these jobs."

Started by companies like CNET Inc. and Techies.com Inc., an online career resource, the day's other participants include America Online Inc. and Compaq Computer Corp. Companies will also use the occasion to cheer their tech staffs with lunches, barbecues and other special activities. ◗

National Techies Day Events

- NPR's Moira Gunn will host a **streaming-video Webcast** at *www.girlgeeks.com* at 2 p.m. EDT tomorrow. Guests on "Techie Truth, or How to Get an IT Life" will discuss career issues for IT professionals.
- A **Techie Team of the Year** competition will recognize a group of up to six individuals who worked together as part of a technology team in 1999.
- **Marc Andreessen** will be among more than 20 technology professionals speaking at a Washington high school.
- The **Association for Competitive Technology** will hold a "talk show" with programmers, database administrators, graphic designers and technology entrepreneurs for inner-city kids at the Kids Computer Workshop in Washington.

Continued from page 1

Big Iron

brings to an unheralded end a user group that had its genesis in 1956 as the Guidance for Users of Integrated Data Processing Equipment for users of IBM 702 and 705 mainframes.

During its peak years between 1987 and 1990, Guide — which started with 44 member companies — had about 3,000 organizations on its roster and drew more than 4,000 attendees to each of its three shows annually.

A core reason for its early popularity was that it provided a forum for peers to exchange notes on the business implementation and management issues relating to large systems, said Jim Lackey, a software configuration manager at Information Systems Management Corp., an information technology services provider in Burnaby, British Columbia.

"It was a user group that influenced the IT industry on behalf of customers," said Lackey, who has belonged to Guide since 1978.

One example of that advocacy is the License Use Management project. Launched in 1994 to address user concerns over growing software costs, the project has resulted in technical specifications and guidelines that will let software vendors adopt usage-based pricing schemes.

The specifications were submitted to The Open Group standards body for approval. After gaining approval for them, Guide had hoped to get vendors to sign on.

"Guide certainly brought an additional perspective to the issues" large-system users faced, especially in its early years, said Ronald Thielen, president of Share. Thielen said that while Guide was always more oriented toward applications and management issues, Share in the early days at least tended to be more focused on operating-system and hardware issues.

Ultimately, though, a failure to react soon enough to market changes — such as a decline in the total number of large systems being maintained by member companies, the increasingly specialized technology needs of its members and dwindling corporate support for large-system user groups — led to declining membership, said Higgin.

When it closed, Guide had fewer than 125 member companies. The group tried a variety of strategies to stem the membership erosion that started in the early 1990s.

In 1994, Guide admitted non-IBM users to its shows for the first time. In 1998, Guide colocated its conference with Share in a bid to cut costs. And early this year, the group launched a conference called Engage, focused entirely on Web-enabling legacy applications. Though the conference drew a mere 80 attendees, the quality of those who came — mostly CIOs and a handful of CEOs — was exactly what Guide had been hoping to attract, Higgin said.

"I believe we were on the right track addressing issues of critical importance to IT management," Higgin said. "However, we started into this repositioning much too late and simply ran out of money before we could complete the transition." ◗

Guide Membership Highs and Lows

Guide was formed in 1956, with 44 member organizations. Membership levels over the years:

1984	2,600
1987	2,850
1988	3,000
1990	2,850
1991	2,208
1995	1,420
1997	1,100

SOURCE: COMPUTERWORLD RESEARCH

HP Serves Up 3 to Chai Line

BY JAIKUMAR VIJAYAN

Hewlett-Packard Co. is trying to make it easier for manufacturers of devices — ranging from printers and handhelds to embedded controllers on manufacturing equipment — to insert more Web functionality into their products.

For users, that could mean appliances that are better at brokering services and communicating with other devices over the Internet.

HP last week introduced three new products to its Chai Appliance Platform. HP's Chai technology is a Java-based development environment that is built on Java specifications but uses HP source code. The Chai platform already includes the Chai Virtual Machine, an embedded Web-based application server called ChaiServer and a compiler called TurboChai.

The three new Chai products are:

- Chai/e-speak, a technology that HP claims will allow manufacturers to insert better Internet-based communications capabilities into their devices. For instance, a printer enabled with the technology can be programmed to automatically dial out for services over the Internet when its toner is running low.
- Chai/OpenView, a technology that allows intelligent devices to be managed by HP's OpenView system management software.
- ChaiFarer, an Extensible Markup Language-based browser for embedded devices, including set-top boxes and handhelds like HP's Jornada.

"The relationship between Chai and e-speak is the most interesting" from a user perspective, said Tom Dwyer, an analyst at Aberdeen Group Inc. in Boston. "It is a strategic move by HP to create a higher level of Internet-based communication" between Web-connected devices and services, he said.

HP's e-speak, which is similar to Sun Microsystems Inc.'s Jini, is an emerging Internet technology designed to provide a common interface for heterogeneous devices and applications to talk via the Web. ◗

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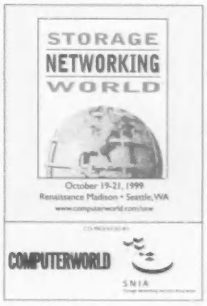

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Panelists:

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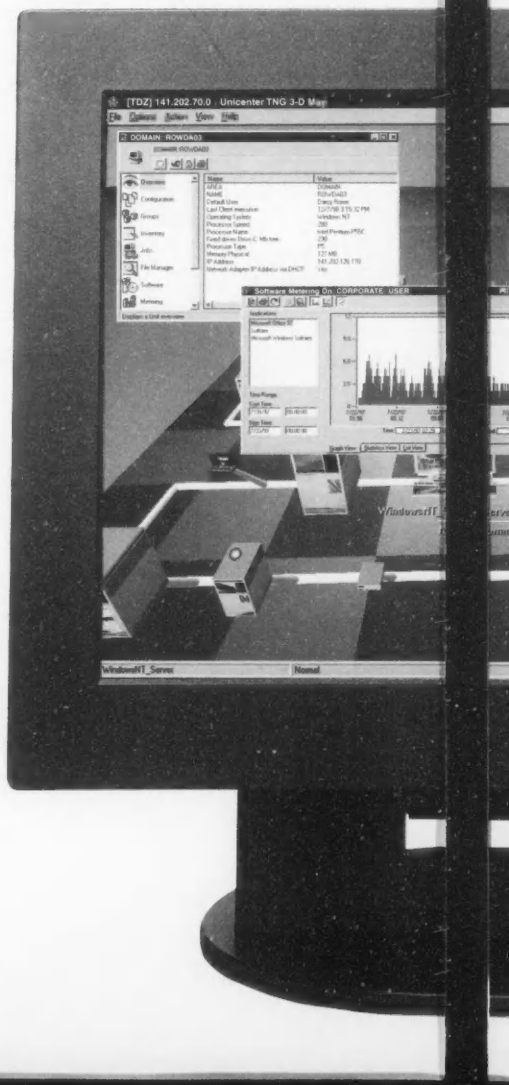

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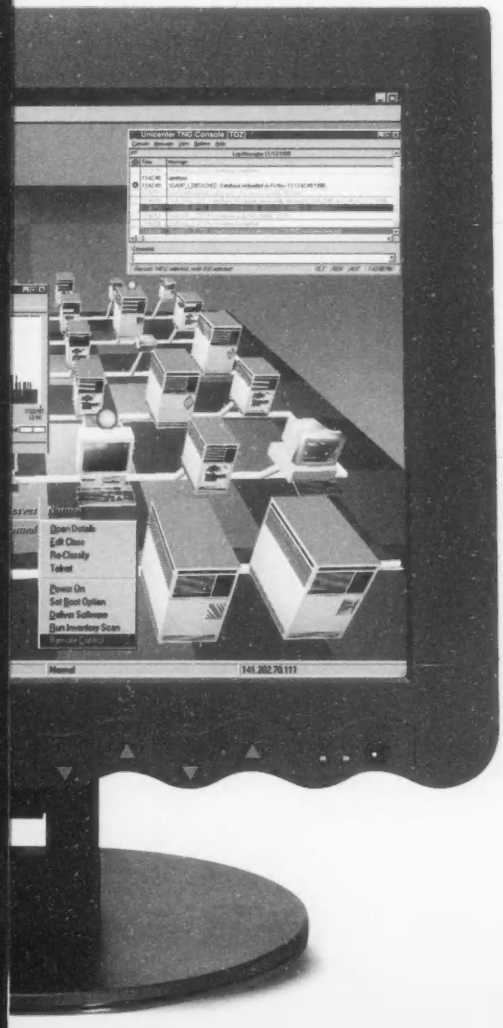

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A Guide to Cisco's Acquisition and Investment Strategy

BY STACY COLLETT

Few companies can build expertise through acquisitions like Cisco Systems Inc.

Armed with $12.2 billion in annual revenue, a whopping $220 billion market capitalization and a CEO who just won't take no for an answer, the San Jose-based company has already tallied 12 acquisitions this year and more than 40 purchases since 1993.

Some industry watchers say many of Cisco's acquisitions were inked in response to customer needs, rather than a corporate master plan.

But in the past six months, Cisco has made some decisive moves to enter the $225 billion telecommunications equipment market led by giants Nortel Networks Corp. in Brampton, Ontario, and Lucent Technologies Inc. in Murray Hill, N.J. Cisco officials said the company plans to transfer its market dominance from networking products that underpin the Internet to the phone world — where it expects voice, data and video streams to converge.

But some observers said Cisco's sights are set too high. Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy, calls Cisco's buying strategy "problematic."

"There will be no convergence on IP any time in the immediate future — maybe five to 10 years. It's not clear to me what they're going to do until then," said Nolle. He said Cisco should focus on data and virtual private networks and end its preoccupation with voice networks.

And how will Cisco executives form a cohesive organization with dozens of diverse units? So far there's been little overlap in technology, so each company has run autonomously, said Liza Henderson, an analyst at Boston-based TeleChoice Inc. But if Cisco's buying spree continues, that won't last long.

"There's going to be a point where they'll have to consolidate," said Richard L. Ptak, an analyst at Hurwitz Group Inc. in Framingham, Mass.

Below is a review of Cisco's 1999 acquisitions and its strategy behind the deals. ▶

DATE	ACQUIRED COMPANY	PRICE	EXPERTISE	CISCO STRATEGY	ANALYST VIEW
Sept. 1999	WebLine Communications Corp., Burlington, Mass.	$325 million	Software helps companies build online customer service and commerce applications	Integrate software with GeoTel suite of distribution call center software	"Cisco's looking to be a major player in the market." – Richard L. Ptak, Hurwitz Group
Sept. 1999	Cocom A/S, Copenhagen	$64.6 million	Broadband access products for digital video broadcasting	Enhance Cisco's existing cable products	
August 1999	MaxComm Technologies Inc., Chelmsford, Mass.	$143 million	Provides high-speed Internet and voice access to homes without adding new wiring	Leverage service providers' existing investment in "Old World" technology while introducing "New World" features	"No way the voice market can change fast enough. They will not win in the voice market [over Lucent and Nortel]." – Tom Nolle, CIMI Corp.
August 1999	Calista Inc., San Jose	$55 million	Internet-based phone technology	Let customers invest in existing digital phones and wiring infrastructure while migrating to new IP-based offerings	"They're putting together an environment that will preserve and capitalize on existing infrastructure and building new infrastructure." – Richard L. Ptak
August 1999	KPMG services (investment), New York	$1 billion	20% stake in services to develop Internet-based data, video and voice	Helps form an end-to-end offering	"They're going to have the services organization to help provide the strategy." – Richard L. Ptak
August 1999	Cerent Corp., Petaluma, Calif., and Monterey Networks Inc., Richardson, Texas	$7.4 billion	Fiber-optic products to combine data, video and voice transmission	Enter the optical transport market, forecast to grow to $17 billion by 2002. Seeking to offer complete infrastructure offerings and "New World" networks	"Optics is an area where companies are building networks around, especially with the fast growth of the Internet." – Liza Henderson, TeleChoice Inc.
July 1999	StratumOne Communications, Santa Clara, Calif.	$435 million	Next-generation semiconductors for high-speed data networks	A key differentiator for Cisco as the demand for IP bandwidth and high-performance, data-optimized devices grows	A good focus for Cisco. – Tom Nolle
June 1999	TransMedia Communications Inc., San Jose	$407 million	ATM-based circuit switching, voice-over-packet technology	Strengthens Cisco's offering in long-distance tandem and wholesale dial (managed modem) services	"ATM plays were done because of migration issues [between old and new systems]. Cisco has to do both." – Liza Henderson
May 1999	Amteva Technologies Inc., Glen Allen, Va.	$170 million	Middleware that combines voice mail, e-mail and faxes into one mailbox for access via IP networks	Showcases the converged voice/video infrastructure important to service providers, enterprise and small and midsize businesses	"It's a good move, part of a strategy to put together a comprehensive set of services with voice, data and fax." – Richard L. Ptak
May 1999	Portal Software Inc. (investment), Cupertino, Calif.	$39 million	4% stake in business software for billing and customer management for the Internet	Adds to distributed call center offerings	
April 1999	GeoTel Communications Corp., Lowell, Mass.	$2 billion	Distributed call centers for business and service providers	Lets Cisco accelerate development of applications on its voice architecture	
April 1999	Sentient Networks Inc., Milpitas, Calif., and Fibex Systems Inc., Petaluma, Calif.	$445 million	ATM equipment vendors, ATM circuit emulation service gateway and integrated access digital loop carrier services	Helps service providers migrate to cell and packet-based networks	"They're preserving existing infrastructure. If there is a large market that's investing in the technology, why shut them out?" – Richard L. Ptak

SOURCE: COMPUTERWORLD RESEARCH BY STACY COLLETT AND LAURA HUNT

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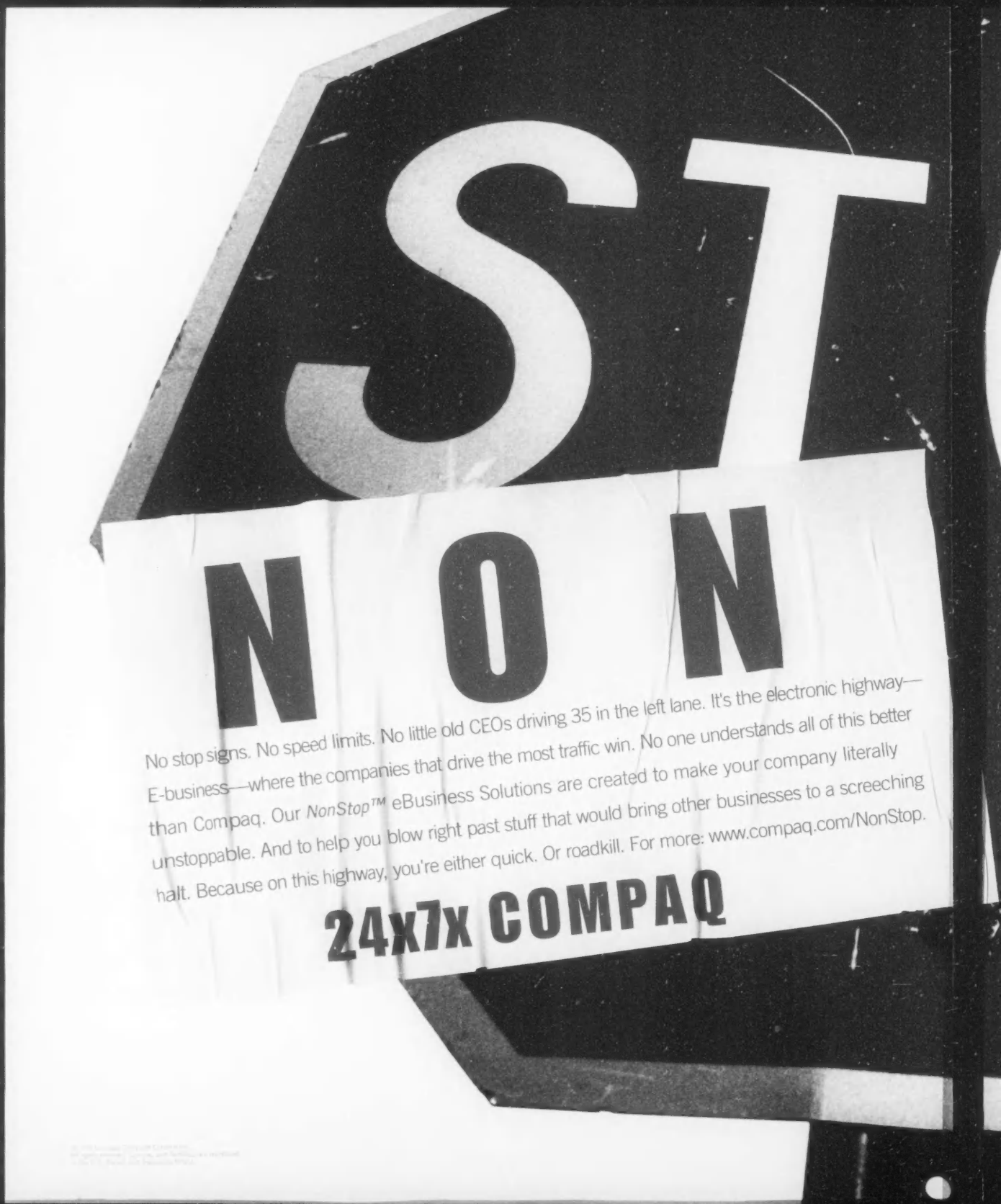
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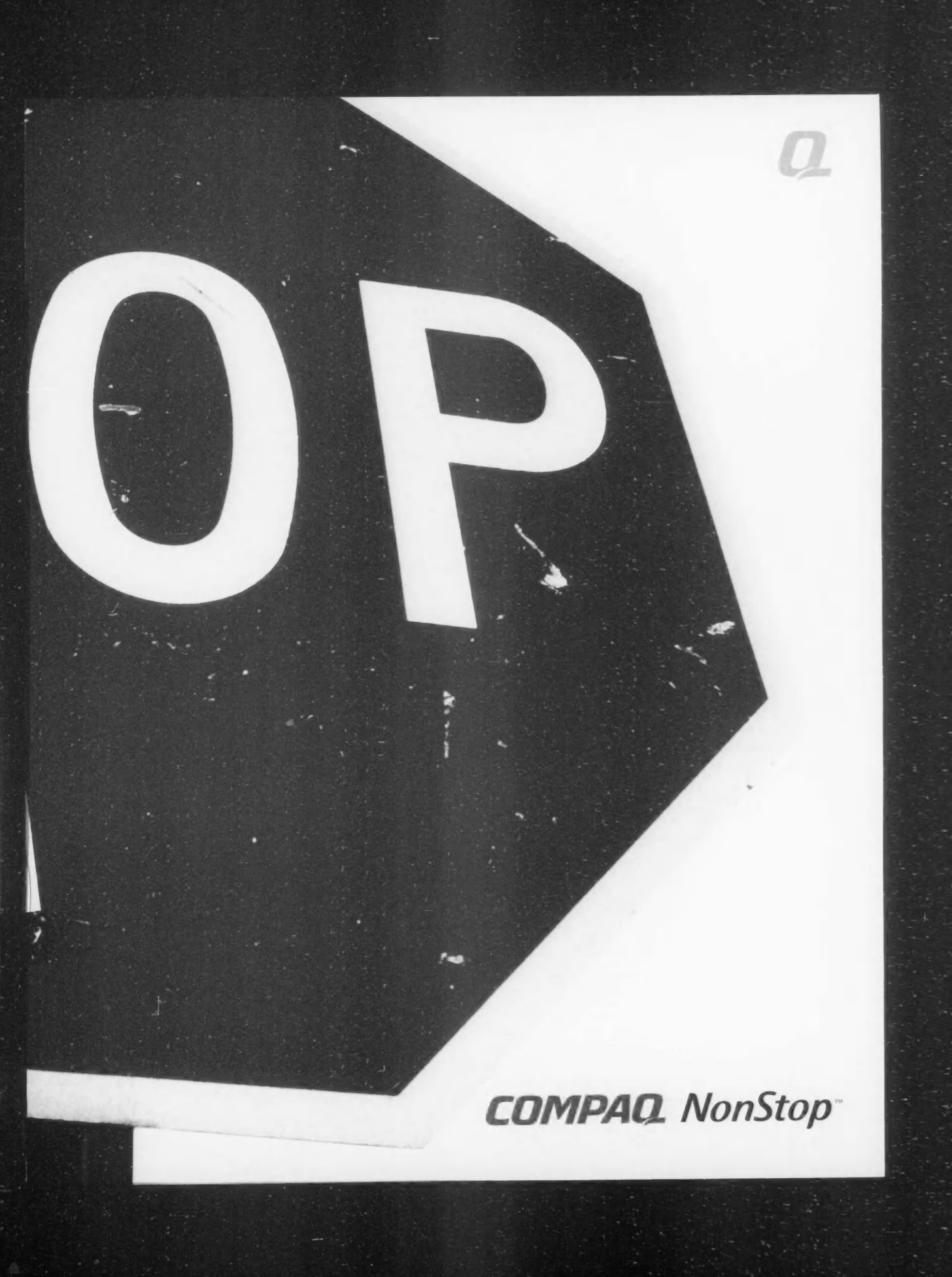
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Sites Take Issue With Links That Bypass Home Page

EBay, in move to protect ad revenue, is latest to try ban; law won't help

BY KATHLEEN OHLSON

SOME COMPANIES are becoming increasingly hostile to the Web practice known as "deep-linking," in which one Internet site posts a link to a page several layers deep on another company's site instead of linking to that company's home page.

The issue came to the front burner last week when auction giant eBay Inc. sought to bar other auction information sites from collecting data about items for sale on eBay and then including links to those items on their own sites. EBay charged those sites with "challenging the eBay user experience."

But competitors argued that eBay's actions go against the entire purpose of the Internet — an open environment for sharing information.

The problem with trying to prevent deep linking is that very little law exists on the subject, some legal experts said. "The law is fairly unsettled," said G. Gervaise Davis III, an intellectual property lawyer at Monterey, Calif.-based Davis & Schroeder.

Privacy Concerns

EBay told auction sites such as San Francisco-based Ruby Lane, Auction Universe in New York and Burlington, Mass.-based BiddersEdge Inc. in late August not to include any more eBay listings on their sites. Kevin Pursglove, an eBay spokesman, said the company didn't want those sites to go through eBay's database because of privacy and "user experience" concerns. Any eBay information on those sites may be delayed or inaccurate, he said.

BiddersEdge received an e-mail from eBay, saying eBay was no longer associating with aggregators because they may post "less-than-quality goods," according to George Reinhart, vice president of marketing at BiddersEdge. "But eBay believes closing the Web is a better process, and it's putting its needs before its users."

Jim Wilcoxson, co-owner of Ruby Lane, said he was "disappointed" with eBay's decision. Ruby Lane, a specialty antique/collectible site, was in the initial stages of a contract with eBay when eBay decided to nix the relationship.

But eBay's real motive was probably to protect its revenue, Davis said. "Bay derives a lot of its revenue from banner ads, and if users skip them [through deep linking], then there's no opportunity to view the ads."

RUBY LANE, AUCTION UNIVERSE can no longer include eBay listings on its specialty antique/collectible site

Breaking the Rule

Meanwhile, San Bruno, Calif.-based AuctionWatch.com isn't heeding eBay's new rule. The auction information site yesterday rolled out a new search service that scans listings on sites such as those of Amazon.com Inc., Yahoo Inc. and Microsoft Corp.'s MSN, as well as eBay.

It's not the first time major online players have tried to bar deep-linking. Ticketmaster Corp. has tried to stop several other entertainment sites from linking directly to ticket-purchase pages on its site. It was apparently unhappy that customers of rival sites would get the convenience of one-click ordering from Ticketmaster — without viewing Ticketmaster's other content or advertising.

State Liquor Law a Backlash Against Internet Merchants

Maryland the latest to boost penalties

BY PATRICK THIBODEAU

Last Friday, a new law took effect in Maryland that will make it a felony rather than a misdemeanor for any out-of-state liquor or wine dealer to ship alcoholic beverages into that state.

In taking this action, Maryland joins a growing number of states that have increased penalties against out-of-state alcohol beverage sellers. It's part of a backlash against the escalating number of Internet and catalog merchants skirting state beverage taxes and sales restrictions, state and industry officials said.

"Making it a felony elevates the whole issue," said Charles W. Ehart, director of the Alcohol and Tobacco Tax Unit in the Maryland Comptrollers Office. The goal of the new law is to serve as "a deterrent to would-be shippers," he said.

States including Maryland, Florida, Georgia, North Carolina and Indiana are increasing penalties because of the difficulty of pursuing out-of-state vendors on misdemeanor charges, said David Dickerson, a spokesman for the Wine and Spirits Wholesalers of America Inc., a Washington-based industry group that represents wholesalers and retailers.

Federal Legislation Pending

Congress is also considering legislation that would allow state officials to go to federal court to seek injunctions against out-of-state sellers. The bill, the 21st Century Enforcement Act, was approved by the House, 310-112, and has since been attached to the Juvenile Justice bill. The fate of this legislation is uncertain, Dickerson said.

Liquor sales have been highly regulated since 1913, when Congress gave states the power to oversee the import and sale of alcohol in their borders. Most states, such as Maryland, use a system of alcohol distribution that allows out-of-state sellers to sell in-state, provided they go through state-licensed wholesalers and retailers.

To operate on the Internet or via catalog, out-of-state liquor sellers must negotiate state-by-state agreements to sell alcoholic beverages. Most hurt by these state laws and restrictions are smaller breweries and vineyards that don't have the resources to negotiate such agreements. For them, tougher penalties will increase their barriers to entry, experts said.

But companies that don't play by the rules avoid local taxes and may also be selling to minors without knowing it, Ehart said. Sellers who violate the laws will probably be given a warning before any legal action is taken, he added.

Nike Inks Pact With Online-Only Retailer

BY JULEKHA DASH

Nike Inc. has inked a deal that allows an online-only sporting goods retailer to sell Nike merchandise beginning this holiday season.

The footwear and apparel giant already sells its goods online via its own Web site, as well as the Web sites of traditional retail stores.

Ken Cassar, an analyst at Jupiter Communications LLC's digital commerce group, said Nike's deal with Fogdog Sports (*www.fogdog.com*) breaks tradition not only with the athletic-footwear maker, but also with the manufacturing industry as a whole.

Manufacturers have been "very careful about deciding whom they will sell products through online," because they risk lowering margins, he said.

But considering the potential rewards, the risk may prove worthwhile for Nike, said Cassar. New York-based Jupiter projects online sales to reach $90 million for footwear and $120 million for sporting goods by year's end. Those figures are expected to skyrocket to approximately $1 billion each by 2003.

However, Cassar said he believes the future success of Nike's online strategy hinges on the footwear maker's limiting distribution to retailers like Fogdog that "abide with minimum pricing guidelines."

The agreement provides Nike 12% of shares in Fogdog, while Fogdog will remain Nike's sole Internet-only distributor until March, the companies announced.

In a press conference last week, Nike CEO Philip H. Knight said Nike chose Redwood City, Calif.-based Fogdog because its three years in business made it a veteran in the world of e-commerce. "Our initial reaction was to step back and understand [what was happening] before we took any significant steps on the Internet," Knight said.

More E-Services From IBM Keep It Among E- Players

Broad offerings help Big Blue in new economy

BY CAROL SLIWA

Backed by a $30 million fourth-quarter marketing campaign, IBM on Sept. 22 detailed plans to promote its business intelligence offerings, coupled with new services that can help companies jump-start their efforts. Days earlier, the company announced upgraded versions of its WebSphere application server line — middleware IBM views as key to helping companies marry their Web front ends to their existing back-end technologies [News, Sept. 27].

The moves provide a snapshot of how IBM has revamped itself, thanks to the Internet — repackaging hardware and software and integrating new products and services.

In a major 1997 campaign, IBM marketed its AS/400, one of the company's oldest midrange servers, as an Internet box. Now it's promoting the S/390 mainframe as a Web server. And Multiprise 2000 and 3000 low-end mainframes carry special user-based pricing options to give customers an incentive to try them for electronic business.

"We have been retooling, inventing, integrating the Internet with everything we do — hardware, software and services," said IBM Vice President John Patrick. "All our platforms are TCP/IP-enabled, and all our middleware is now oriented around this notion of e-business," he said.

To Neal Goldstein, senior vice president of architecture and planning at Charles Schwab & Co., IBM "gets it."

At the backbone of the San Francisco financial institution's electronic trading system sit IBM mainframes, servers and middleware. Schwab's pre-Web trading system was also built on IBM mainframe technology. Goldstein said IBM has been responsive to his company's needs as it expands to handle escalating volumes of Web traffic.

"They're migrating their products to understand the need for continuous availability, high performance, ... scalability, extensibility, reliability," Goldstein said.

Commitment Is Key

One reason why Recreational Equipment Inc. (REI) says it chose IBM's Net.Commerce to create and run its Web storefront was IBM's commitment to e-commerce. "For me, this is a big business, and I needed to have a company behind me that was going to put significant resources into the product that we were going to use," said Matt Hyde, vice president of online sales at REI.

To date, IBM has not been the dominant player in several key e-commerce product spaces, such as Web application servers, noted Vernon Keenan, CEO of research and consulting firm Keenan Vision Inc. in San Francisco. "People look at [IBM's] PR and advertising campaigns, and I don't think the reality matches the hype," Keenan said.

Keenan and other analysts predict that IBM and four other vendors (see chart) will emerge as the dominant players for Internet infrastructure and services — particularly for major corporations that are just starting to get serious about the Internet. But IBM has the greatest breadth of offerings.

"Their footprint is so much bigger than just about anybody else's in the marketplace," said Chris Selland, an analyst at The Yankee Group in Boston. "If I'm Wal-Mart and I want to compete with Amazon, I don't want to call 40 little vendors to buy an application. I want to make one call for hardware, software, services. I call IBM. Everyone else has to bring in partners."

Right now, IBM estimates that 25% of its revenue — or $20 billion — is linked to its electronic business thrust.

IBM recognized "that a Web site didn't have real business value until you could link it with existing transaction systems and databases, so that companies could be handling orders, doing customer service and conducting business basically using their existing systems but with a Web front end," said analyst Andrew Bartels at Giga Information Group Inc. in Cambridge, Mass.

IBM's commitment to Java and Extensible Markup Language (XML) is one of the main forces driving AlliedSignal Inc.'s aircraft landing systems division in South Bend, Ind., to use IBM's WebSphere to connect Web front ends to its back-end systems in more than a dozen new electronic-business projects, said application development manager Dave Kulakowski.

"We feel there's going to be a role in e-business for Java and XML," Kulakowski said. "And it seems that IBM is smart enough to recognize that and build products for that technology."

But not every longtime customer has chosen IBM for e-commerce. OshKosh B'Gosh Inc. uses IBM RS/6000 servers and a DB2 database at the core of its data warehouse, but the firm's CIO, Jon Dell'Antonia, earlier this year chose Sunnyvale, Calif.-based Pandesic LLC to help launch his company's retail site.

"Back when we needed to make a decision, Pandesic offered us more of a complete turnkey package," Dell'Antonia said.

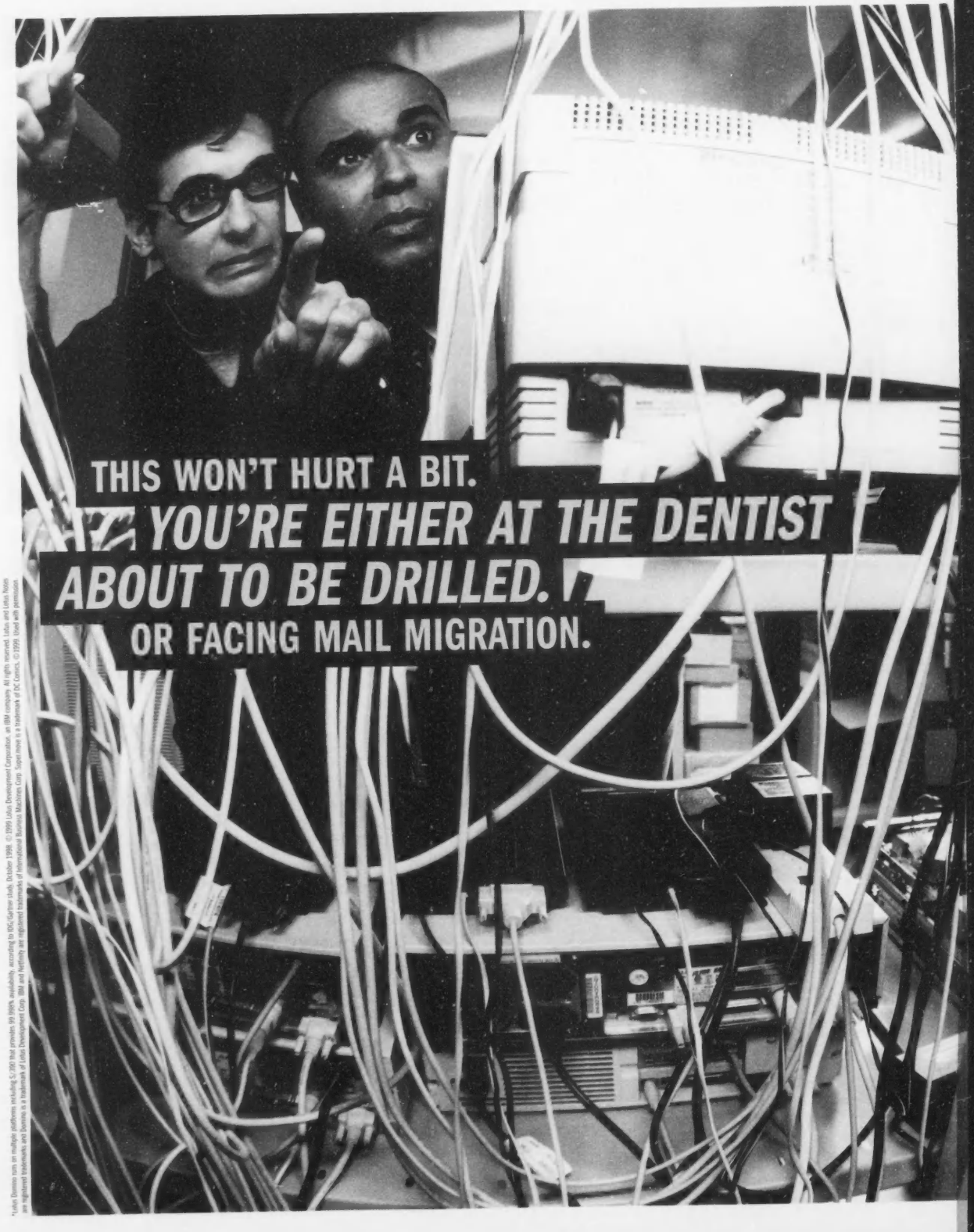
Computerworld senior writer Stewart Deck and senior editor Jaikumar Vijayan contributed to this story.

Internet Infrastructure Offerings

	Sun/ Netscape Alliance	IBM	Microsoft	Oracle	Hewlett-Packard
Hardware	●	●	●	●	●
Middleware infrastructure	●	●	●	●	●
Transaction-based e-commerce apps	●	●	●	●	●
Web integration services	●	●	●	●	●
Management tools	●	●	●	●	●
Web browser	●	●	●	●	●

● Complete offering ● Partial offering ● No offering

SOURCE: THE YANKEE GROUP, BOSTON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BRIEFS

Sun Hires Ex-IBM Java Manager

Sun Microsystems Inc. last week appointed Patricia C. Sueltz as president of Sun's Software Products and Platforms Division. The position has been open since Alan Baratz left in August to join a private-equity investment firm. Sueltz formerly was general manager of IBM's Java software division.

NEC Restructures

Japan-based NEC Corp., the world's second-largest semiconductor maker and the parent company of PC vendor Packard Bell NEC Inc. in Sacramento, Calif., will recast itself as a provider of hardware, software and services for building Internet applications, the company said last week. The reorganization is NEC's latest attempt to reverse its troubled financial picture.

Alcatel Buys Genesys

Alcatel SA, a French manufacturer of telecommunications equipment, last week said it's buying San Francisco-based software vendor Genesys Telecommunications Laboratories Inc. in a stock swap deal valued at $1.5 billion. Genesys provides computer/telephony integration and call center management software.

Netopia Purchases StarNet Technologies

Alameda, Calif.-based Netopia Inc., which provides Internet and e-commerce infrastructure to small and midsize businesses, last week said it will acquire StarNet Technologies Inc., a San Jose-based developer of integrated voice and data communications technology and products. Terms weren't disclosed.

Short Takes

CABLETRON SYSTEMS INC. last week created a new division, Global-Network Technology Services. . . . MPATH INTERACTIVE INC. in Mountain View, Calif., changed its name to HEARME and said it will acquire RESOUNDING TECHNOLOGY INC., a vendor of real-time voice chat technology for the Web.

IBM, Dell Sign $6B PC Services Pact

Some say deal giving Dell users outside support places IBM's PC business at risk

BY STACY COLLETT

IBM AND DELL Computer Corp. in Round Rock, Texas, last week signed their second pact this year to combine IBM's technology and service expertise with Dell's growing enterprise PC and server businesses. But by formalizing the relationship, some observers said IBM casts a shadow on its PC unit, which sold half as many PCs as Dell and Compaq each sold in the second quarter.

Under the new agreement, Dell will offer its enterprise customers a range of installation and on-site warranty services from IBM Global Services for Dell's desktops, notebooks, workstations, network servers and data storage products. Services will begin early next year for U.S. customers and extend to international markets later in 2000.

Dell already has global service partners Unisys Corp. in Blue Bell, Pa., and Getronics Wang in Amsterdam, as well as its own services group.

> [The Dell agreement] does put IBM hardware at high risk.
>
> ROB ENDERLE, ANALYST, GIGA INFORMATION GROUP

Officials said the pact, potentially worth $6 billion over seven years, builds on the $16 billion strategic agreement announced by IBM and Dell last March, which gives Dell broad access to components based on IBM technology. IBM and Dell shared informal services deals in the past based on customers' preferences.

IBM has also inked deals with other major vendors to supply high-value parts such as chips and disk drives. The combined deals are worth $30 billion over seven years. Last month, IBM sold its networking technology to Cisco Systems Inc. in San Jose, effectively ending its role as a maker of computer networking hardware after struggling in that market for years.

Some observers said the pacts with Dell don't bode well for IBM's PC unit.

"It does put IBM hardware at high risk," said Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif. "As a result [of the agreement], I would expect the desktop stuff to fall off very sharply."

IBM CEO Louis V. Gerstner has encouraged each of IBM's units to stand on its own for years, said Roger Kay, an analyst at International Data Corp. in Framingham, Mass. But IBM has always put up a united front when it came to PCs and services. "When you're asked to come in with hardware, you provide the house brand," said Kay. The $29 billion Global Services division is the fastest-growing unit at IBM.

Meanwhile, IBM officials insisted the personal systems group is here to stay.

"Several million non-IBM devices [including Dell and Compaq hardware] are serviced by IBM Global Services," said Michael Corrado, a spokesman for IBM's personal systems group in Somers, N.Y. "None of these arrangements have put us out of business, and we don't think they're going to now. It's more revenue to IBM."

Corrado added that Dell became a reseller of IBM technology through the agreement. "My comment to Dell customers is buy direct from IBM," he said.

AT A GLANCE

Anatomy Of the Deal

Services: Installation and maintenance by IBM through warranty agreements.

Products covered: Dell desktops, notebooks, workstations, network servers and data storage products.

Who benefits: U.S. corporate, government and educational customers

Availability: Early 2000

Contract value: Perhaps $6 billion over seven years.

HP Services Makes E-Commerce Moves

Some programs target key industries

BY JAIKUMAR VIJAYAN

Hewlett-Packard Co.'s $6 billion customer service and support group will launch several new initiatives during the next few months to keep pace with the company's frenetic electronic-services push.

The moves are aimed at expanding HP's services and consulting capabilities, especially in key industries such as manufacturing and communications.

Goals

Among the planned initiatives are the following:

- A consulting service called Discovery Workshops, initially for large companies in the automotive, aerospace, high-tech electronics and pharmaceutical industries. HP will help customers explore opportunities for adding Internet functionality to enterprise resource planning, supply-chain and customer relationship management applications.
- A services partnering program under which HP will increase the number of partners qualified to deliver critical support services on its behalf.

Under the program, HP will group its partners under four broad categories, ranging from hardware support and sales to joint-selling and joint-service delivery partners.

- A Web-based instruction and certification course for users of HP technology, to be launched by HP Education services next month.
- An increased emphasis on joint ventures in the outsourcing space — especially in the Internet area — such as Intria-HP, the result of a joint venture with Canadian Imperial Bank of Commerce.

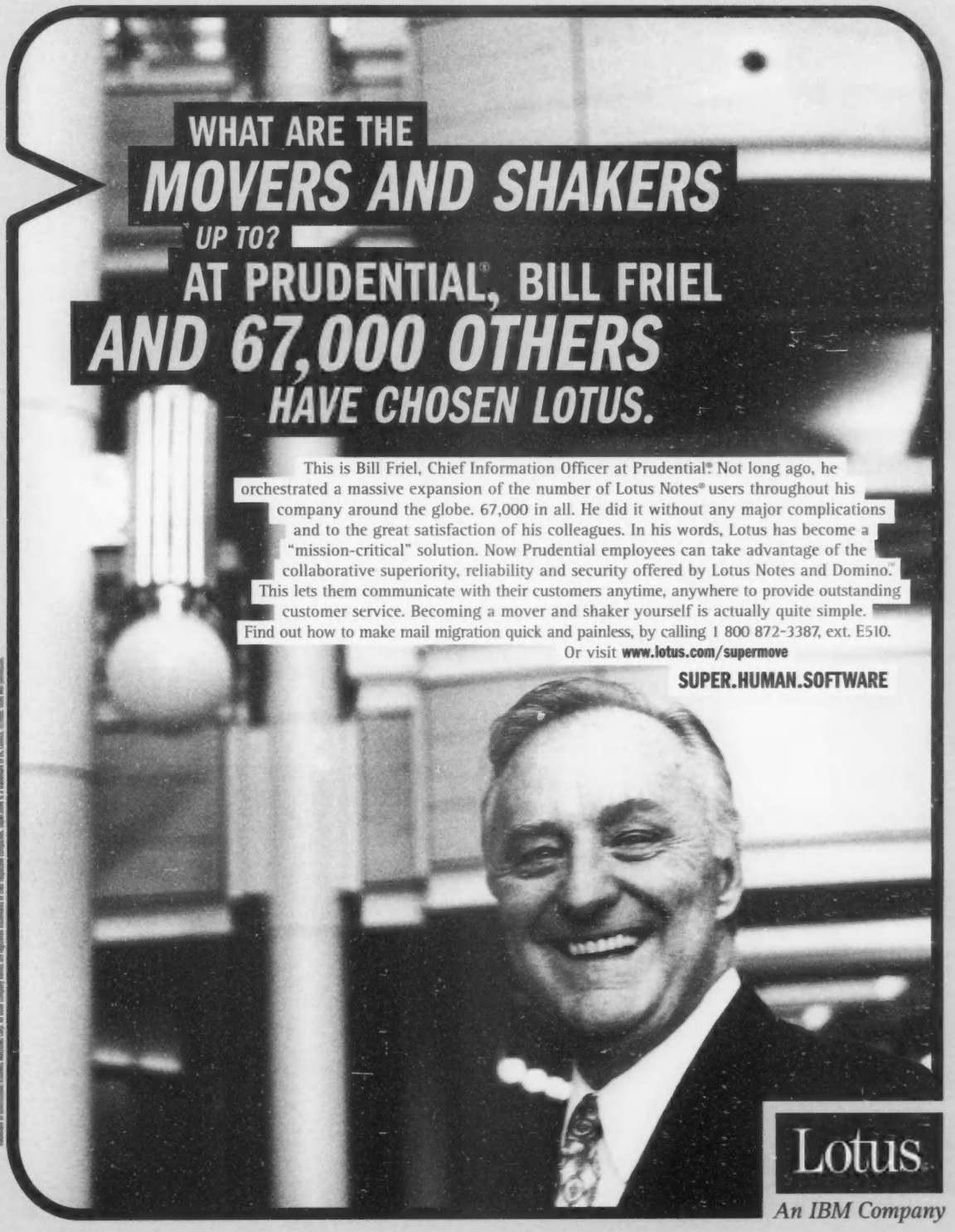
HP still has a way to go before it gets the kind of brand recognition that Sun Microsystems Inc. and IBM have for Internet technology, said Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H.

"But HP has been on the ball when it comes to the energy and number of practical things it is doing on the services and technology front to get there," Eunice said.

Teaming Up

HP and Oracle recently announced several joint initiatives:

- Oracle will make HP-UX the platform for Oracle's electronic-business software.
- The two companies will share customer databases to take advantage of opportunities in the customer relationship management market.
- Oracle's Business Online service will be hosted on HP hardware — and at least 50% of Oracle's internal systems will use HP hardware in the next few years.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PATRICIA KEEFE

E-ticket exasperation

THINKING of flying on an electronic ticket? Better check the weather first. Then double-check your itinerary. Heaven forbid you make any changes or encounter any delays. Your ticket won't compute.

Despite the fact that some airlines have been crowing about their ambitious IT plans to improve customer service, somebody obviously overlooked e-tickets. The airlines all use different e-ticketing systems, so trying to switch a ticket from one carrier to another — a piece of cake with old-fashioned paper — is an express trip to Travel Hell.

PATRICIA KEEFE is *Computerworld*'s editorial director. You can contact her at patricia_keefe@computerworld.com.

During a recent business trip to Atlanta that coincided with the arrival of Hurricane Floyd, I was forced to switch back and forth from Delta to USAir in a frustrating three-day attempt to get home to Boston. The airlines tossed my e-ticket back and forth like a hot potato. One ticket agent gingerly looked over my e-ticket slip before demanding "the rest" of my ticket — and accused me of paying only for one-way.

At one point, I had to break down and buy a paper ticket just to get between two stopovers. At another, two levels of supervisors were studying a printout from the main reservation system, looking so befuddled I finally asked whether they were familiar with their company's product. As my hopes of any sort of reasonable customer service dwindled, the line of irate travelers waiting behind me grew.

So this is the promise of the Web? This is how airlines like Delta plan to use technology to "push real-time, integrated flight and passenger information to airline workers" [News, June 14]?

It's inexcusable that the airline industry has failed to set a single international standard for electronic ticketing. Just such a proposal in August from IBM and an industry trade group elicited a mostly cool response [News, Aug. 16]. That's disgraceful. Ticket information is ticket information, and the experience should be the same for customers whether the ticket is paper or electronic.

There's a real opportunity for airline IT executives to take the lead in lobbying for — and building — the systems that will enable exchange of this information. Without it, we're facing another thoughtless rush to the Web that falls flat over customer service.

WILLIAM ULRICH

Y2K problem solved; nothing left to do but panic

THE U.S. has solved the year 2000 problem. I learned this during a series of Washington roundtable sessions where public relations directors and government representatives spun their version of Y2K for the media. The message was clear. Y2K has been fully eradicated from the financial, power, food and other key industry sectors. These roundtables were part of a public relations directors campaign that has made people sanguine about Y2K, a campaign that could lead people to overreact when minor problems do arise.

WILLIAM ULRICH is president of Tactical Strategy Group Inc. and co-founder of Triaxsys Research LLP. Contact him at tsginc@cruzio.com.

Mike Griffin, president of State Savings Bank in New Jersey, said banks would have very few year 2000 problems. He did say there could be a "little bank" somewhere that has a problem with a system, where a customer has a Visa or MasterCard that doesn't work. I found this comment odd. Credit systems are most vulnerable to Y2K failures when checking card expiration dates before the century rollover. Once rollover occurs, the system should work fine, because expiration dates and current dates fall within the same century. Why would he single this out to be our only banking problem?

A better question is: Why does he believe large, multinational banks with millions of lines of code, tens of thousands of desktop systems, thousands of date-laden data interfaces and large foreign investments won't experience any Y2K failures? Stating that a credit system is open to rollover failures but that giant institutions with millions of date-related exposure points will have no noticeable problems is beyond logic.

Other industries echoed similar sentiments: There will be no problems — just the potential for panic. Industry representatives said panic could result in the hoarding of cash, food and medicine. But the latest *USA Today*/CNN poll suggests people no longer consider Y2K a major threat. Those people who do care are likely to have taken precautions already.

One reporter, however, offered a second and more compelling panic scenario. Citizens and small businesses are assuming key industries will have no noticeable problems in 2000, based on assurances from industry leaders. But when in-

evitable problems arise, no one will believe those assurances, and panic will ensue. One international consultant thinks the U.S., while more technically prepared for Y2K, is unprepared psychologically for problems that might arise. Even minor inconveniences could surprise people and spawn media-fed, Internet-fueled post-2000 panic.

With panic a definite possibility, I believe government and industry leaders should notify people to expect failures and inconveniences. If nothing happens, as they say, no harm is done. If there are problems, people would be prepared and post-2000 panic might be avoided. When I suggested this to the panel of industry leaders, they had no immediate response.

It seems that private industries and the federal government, in responding to dire predictions of Y2K failures, have backed themselves into a position that is counter to their overall goal of avoiding panic. It isn't too late to offer a balanced view to the public, but they better begin soon.

DAVID MOSCHELLA

Microsoft is losing its monopoly, no matter the verdict

ONE OF THE MANY ironies of the Microsoft antitrust trial is that its duration seems destined to coincide precisely with the realization that monopoly power in the IT industry is on its way out. Although this likelihood can't be used to defend against anything that Microsoft may have done in the past, the increasingly competitive nature of the IT industry can't help but affect the mind of Judge Thomas Penfield Jackson.

DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at **dmoschella@earthlink.net**.

The history of monopoly power in the computer industry is actually remarkably straightforward. It all began with Tom Watson Sr., who learned the fine art of crushing competitors while selling for the then-notorious National Cash Register Corp. By all accounts, the ruthlessness of IBM in the 1920s and '30s makes Bill Gates and company look like Santa Claus. In a lax antitrust environment, Watson quickly wiped out nearly all of IBM's once numerous electromechanical equipment rivals.

To its great credit, IBM and Tom Watson Jr. managed to maintain this near-monopoly position through the long transition to fully electronic computing, creating the mainframe colossus of the 1960s and 1970s. Since then, monopoly power has been steadily and inevitably dissipating. First came minicomputers, where IBM could never get more than a third of the business. Then, of course, came the PC and IBM's fateful decision to essentially pass its power on to Microsoft and Intel and, much less directly, to Cisco.

As great as the power of these three companies is today, it's still restricted to a few relatively narrow industry segments that account for only a tiny share of total industry revenue. Moreover, even the combined global power of the three giants is nowhere near what IBM alone enjoyed in its heyday. Clearly, the computer business has become more competitive over time. But now the Internet has emerged to finish off the job.

Already, the emergence of non-PC devices and the always-pesky plug-compatible chip competition have helped confine Intel. Now, the accelerating shift from packaged software to Web services promises to rein in Microsoft's once unbounded ambitions. Lastly, the shift from in-house corporate networks to public carrier services will inevitably loosen Cisco's still-iron grip on the data-communications-equipment industry. All three companies should continue to thrive mightily, but their power has already begun to ebb.

People often ask who the next Microsoft or Intel will be. The simple answer is "No one." Although there will certainly be many huge new Internet companies, there probably won't be any major new monopolists. No company will be able to control Internet transmission, content, commerce or access devices, although Microsoft and Intel still have a slim chance to eventually gain control of the Web server business.

The reality is that one of the main reasons IBM, Intel, Microsoft and Cisco have grown so rich is that their customers have been so locked in. Software compatibility has always been at the heart of sustainable IT monopolies. But on the Web, software is subordinate to services, and services are much more difficult to control. Judge Jackson's dilemma is how to deal with today's still-powerful Microsoft monopoly at the very moment it becomes clear that it should eventually fade away.

READERS' LETTERS

Different takes on technology in 1985

I FOUND YOUR Flashback articles for 1985 [Technology, Sept. 13] rather interesting, but Tom Duffy's statement in "Windows Arrives" that "it took Microsoft Corp. to popularize" windowing technology was a rather liberal interpretation of the actual events.

Apple Computer released System 1.0 with the original Macintosh on Jan. 24, 1984, almost two full years before Windows 1.0 hit the street. And the 1.0 version of Windows was so slow and clumsy as to be virtually unusable. Not until Microsoft released Windows Version 3.0 in May 1990 did the graphical environment for the Intel PC take off. Apple had already sold several million Macintosh computers by this time.

Mark R. Sherman
Systems manager
Sears, Roebuck and Co.
Hoffman Estates, Ill.

FLASHBACK FOR 1985 has an egregious omission. That was the year Commodore Business Machines introduced the Amiga.

For the first time, a mass-market computer came standard with a 32-bit operating system featuring real-time, preemptive object-oriented multitasking, a color windowing system and a powerful but friendly command-line interface (not to mention digitally synthesized multichannel audio), all supported by custom hardware doing asynchronous processing. The system specifications on the box detailed not only RAM and CPU speed, but also stereo separation and Total Harmonic Distortion. The bus was auto-configuring.

Tim Holloway
Alltel Corp.
Jacksonville, Fla.
Tim.Holloway@alltel.com

1900 isn't the only year 2000 problem

I WISH SOMEONE would put into print for all to see that not all computers will interpret the "00" as 1900. In fact, most of the more modern PCs will interpret "00" as their creation date — more specifically, 1980 (and not Jan. 1, either). In my testing as a consultant, I have seen dates range from July 1980 to August 1984, depending on make, model and year of the machine.

What no one seems to recognize is that all the patching and "fixing" going on now that is based on re-interpreting "00" from 1900 to 2000 will create only a new brand of chaos when 1980 becomes 2080, etc. I don't think I need to expand on the potential disaster, do I?

Joe Lyon
Lyon A/B/C Consulting Services
Ames, Iowa

IT professionals earn more, deserve more

IT WAS A LOT OF fun reading the *Computerworld* salary survey ["Return to Sanity," Business, Sept. 6]. However, a look in the paper in the Los Angeles area shows IT professionals commanding more than the survey shows.

My neighbor, who is soon to graduate from the University of California at Irvine's IT program, concurred. He's entertaining offers not only in the U.S. but abroad, with salaries on the upper end of the scale. I think companies have become enlightened that solutions, problems, profits, etc. can be boosted by a single employee.

I do think it trite hearing people complain about the high price of IT employees. One programmer can save — or generate — more profits than those narrow-minded enough to spout their complaints.

Steve Solo
Irvine, Calif.

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

MICHAEL COHN

An e-commerce e-primer for the e-perplexed

BUSY? SHORT-HANDED? Eighteen months behind on Y2K? Doesn't matter. Because if your business hasn't rushed to the Web, you're toast.

But the sad truth is that a whole bunch of you solid, since-the-'70s CIOs still don't understand this cyberstuff. E-biz is new, different from anything you've tried before, and it's breathing down the back of your neck. You know you want it. You know you need it. But if you ever got it, you'd have no idea what to do with it — which is kind of like most of my dates back in high school.

Let me make it easy for you. Here's a simple primer explaining the key terms and travails of e-business, so the next time some e-smooth-talking e-salesman comes e-calling, you'll know what he's e-talking about:

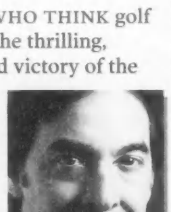
MICHAEL COHN is an e-commerce consultant in Atlanta . . . and, unfortunately, so is everyone else. Contact him at **mdyinc@aol.com**.

- **Intranet:** A private, confidential, internal network with the look and feel of the Internet.
- **Internet:** Where most of your most private, confidential stuff will wind up, even though you could have sworn you had an intranet.
- **E-coerce:** Being forced by your CFO to "get something on the Web" ASAP, then blowing a bundle on a system that would have worked if you'd had more time.
- **E-sourcing:** Outsourcing your project to an experienced e-commerce provider, then blowing a bundle on a system that would have worked if you'd had more money.
- **Dot.com:** Popular term for this whole Web thing, but not as popular as *gee-this-sure-cost-a-lot-com* and *now-I-wish-we-had-not-com*.
- **Knee-commerce:** The jerking reaction to get online, usually made by some $8 billion-per-year retailer that just realized that a whole mess of market share is heading out the door to the e-commerce site of two housewives from Milwaukee.
- **E-hits:** The number of times potential shoppers visit your Web page.
- **E-purchases:** About 0.0001% of e-hits.
- **End-to-end Web-based business:** A leading-edge, competition-crushing combination of ERP, world-class logistics and e-commerce — or what you get in a $4.5 million system.
- **Online investing:** How most of your people will use that $4.5 million system.
- **Hardware:** Low markup servers, routers and desktops (on which no one makes any money).
- **Webware:** Browsers, explorers and other Net tools (on which no one makes any money).
- **Middleware:** Randomly selected bundles of confusing and incomprehensible products (that ensure salesmen a ton of commission money).
- **Global access:** (1) Enables your customers to reach you worldwide, 24 hours a day. (2) Enables ability for your *boss* to reach you, worldwide 24 hours a day, to tell you your Web site just went down.
- **E-lation:** Discovering your new Web site has just brought in $2 million.
- **E-limination:** Discovering your new Web site has just been hacked for $20 million.
- **Transaction security:** When your salesman is sure that your megacheck for your new e-commerce system isn't going to bounce; after that, you're on your own.
- **E-commerce consultants:** Expensive, vendor-supplied personnel who just finished a Y2K project.
- **Senior e-commerce consultants:** Even more expensive vendor-supplied personnel who recently finished a Y2K project and then screwed up their first e-commerce project.
- **Business-to-business:** Where you'll be sending your résumé if you screw up this e-commerce thing. ◗

BILL LABERIS

Of golf and IT: Let's keep the U.S. on top of its game

EVEN TO THOSE WHO THINK golf is a stupid game, the thrilling, come-from-behind victory of the U.S. team over Europe at the recent Ryder Cup was inspirational. Without government interference, a bunch of guys huddled the night before their epic comeback and devised a way to win against all odds.



BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld*. Contact him at **bill@laberis.com**.

That victory caused me to reflect upon a more important realm where Americans dominate: the IT industry.

Yes, I know, even the major vendors like Microsoft and IBM and HP are quick to say they are really multinational giants. But their direction, major funding, strategic initiatives and principal technology breakthroughs are colored red, white and blue. It's a fact.

This is not just idle jingoism I'm spouting here. We are fast approaching another prime-time event known as the national election season. It is mission-critical that users and vendors alike reflect upon the reasons why Americans dominate the computer industry (and I'm going to make the brazen assumption that this dominance is good for us). Much of this dominance stems from the fact that the industry has grown and evolved so quickly that the federal government hasn't had the opportunity to stick its big nose directly into it.

What are the success factors that help the American high-tech team drive long and accurately, whether the challenge be in telecommunications, software, networking or services?

Anyone can be a billionaire. If there is one freedom we take for granted, it is the freedom to work as hard as one wants and get as rich as one wants. That freedom is expressed most readily in the U.S., far more so than in any Western European country and certainly more so than in Japan. In Europe, various labor laws, immigration laws and a hopelessly burdensome tax system stifle the entrepreneurial spirit. In Japan, the stifling element is more systemic. But arrive on our shores with a great idea and boundless drive, and what you find is . . .

Ready access to capital. Central banks, to this day, still control the flow of capital in many developed foreign nations, Japan being a prime example. Here, banks are an also-ran in the high-tech funding arena, par players at best. The action is run by the venture capitalists, whose high-risk, high-reward world may represent one of the purest forms of capitalism to be found anywhere. Free from most government regulations, venture capital has managed to flow to all the right places, underwriting and seeding powerhouses like Sun, Cisco and so many others. And once that funding begins to flow and ideas begin to generate substance, the entrepreneurs will find . . .

World-class talent from a world-class university system. If there is one place that federal and state spending have produced measurable and tangible returns, it is with investments made in higher education since World War II. Many of the pioneers who built the early computer companies were educated via the old GI Bill. The state university system has put affordable college education within reach of just about anyone. In many European countries, by contrast, higher education remains a highly selective, almost elitist world. And the emphasis there on math and science in the lower grades pales in comparison with the educational emphasis in our high schools. While Japan's public educational system is among the finest, college graduates there still enter a world where individual expressions of entrepreneurialism are few and far between.

Our system, flawed as it may be, is one that allows the cream to rise to the top, and in doing so, millions of others of us have benefited.

Make no mistake about it, there are those who disdain this system and would seek to level it, maybe make it more "European" in flavor.

Listen carefully for their voices as election time approaches. ◗

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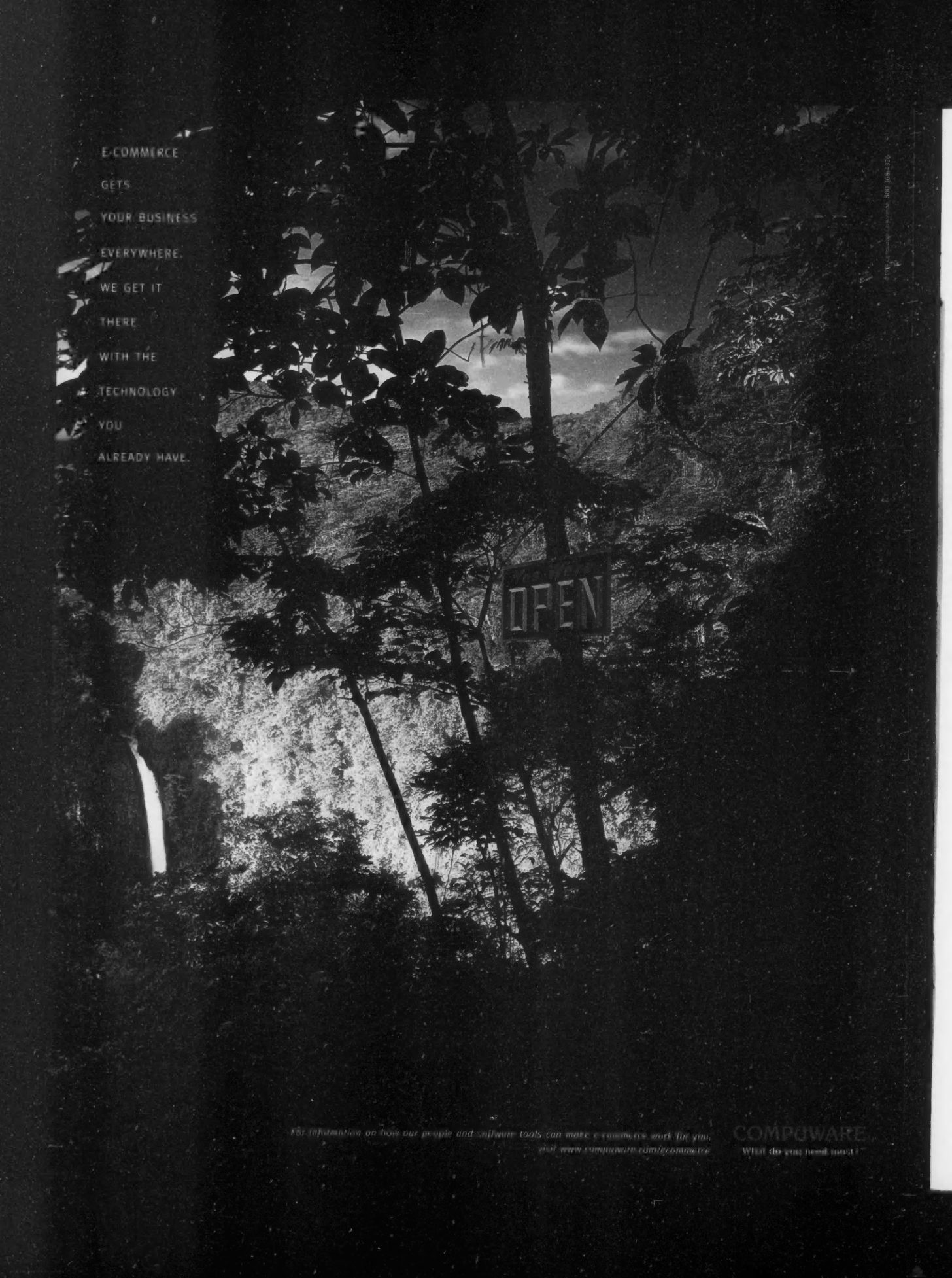
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BUSINESS

EPA WORST CASES

The EPA has posted worst-case scenarios for Y2K and other disasters at many chemical companies. The aim was to help locals respond, but some wonder if it will give terrorists ideas. ▸ 38

TESTING A CLONE

Gelco Information Network isn't as big as some companies that duplicate their systems for no-downtime testing. But its 24/7 processing requirements justified the relatively high cost of cloning, if it meant systems stayed up on weekends. ▸ 38

ONLINE CATCH-UP

In a struggle to catch up with more nimble online traders, Wall Street firms will nearly double Internet IT expenditures by 2002, a new report shows. Some money is aimed at consumers, but even systems for commercial customers are getting a front-end face-lift. ▸ 40

ERP RE-EXAMINED

Many companies install ERP systems without fully planning how to get the most out of them. However, some new tools and services are available to help those that are going back to evaluate tech and business processes to get more bang for their buck. ▸ 40

SUPPLY-CHAIN BLUES

Retailers are notoriously sensitive to supply-chain problems because they deal with thousands of suppliers. But a new report shows that many get little benefit from investments in IT to automate supplies. ▸ 42

THINE OWN KNOWLEDGE

The knowledge management craze has more to do with vendors desperate for sales — and consultants for contracts — than it does with managing knowledge assets, Paul A. Strassmann charges. Knowledge capital is still profitable, but it often depends much on minds and little on technology. ▸ 46

PERKS APLENTY

Recent studies show that there are things more important than money to IT people. Work/family balance is important, too, as the rise in flextime and other family-friendly benefits shows. ▸ 46

WIRED? HIRED!

Computerworld's latest quarterly hiring survey finds e-commerce and Web skills are the hottest on the market. Skilled Websters can get salaries in six figures and raises twice those of their less lucky compatriots. ▸ 56

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Career Adviser offers tips on how to navigate the employment waters following a serious illness. ▸ 60

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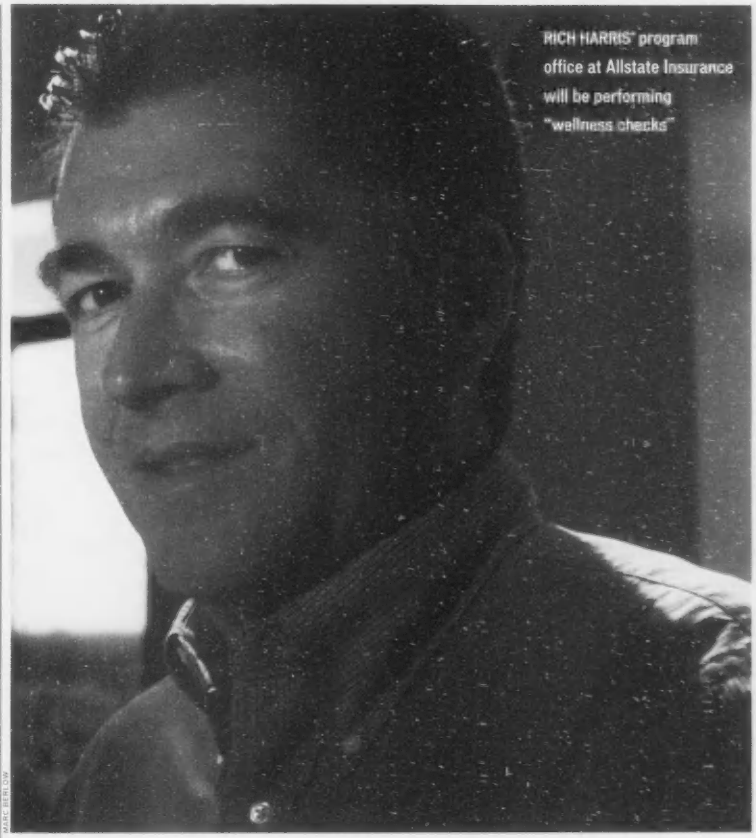


RICH HARRIS' program office at Allstate Insurance will be performing "wellness checks"

MARC PERLOW

WHAT HAPPENS AFTER MIDNIGHT?

Y2K ISN'T GOING TO HIT in one fell swoop at midnight Dec. 31. It'll hit 24 times around the globe, six times in the U.S. alone, keeping Y2K staffers hopping through a very long night. Will your contingency plans keep problems under control? Maybe. If you've really road-tested the details. Example: If a computer doesn't send a message for a plane to take off, does the pilot know where to pick up the fax with the right instructions?

50

Disaster Scenarios Spark Terror Concerns

Y2K risk may increase interest in EPA data

BY PATRICK THIBODEAU
WASHINGTON

THE U.S. Environmental Protection Agency (EPA) has posted on the Internet worst-case scenario data on what harm chemical disasters could pose to local communities. The goal is to help local communities prepare, but some experts warn the data may also help terrorists get the details they need to select targets for attack.

Congress requires the EPA to keep key worst-case data, such as charts depicting the distance a chemical cloud could travel. It requires the main parts of those reports to be kept off the Internet, but the EPA can post the executive summaries to those reports. Some companies evidently filed detailed summaries by their own choice.

Some of the summaries include worst-case data like the area a toxic chemical cloud would cover if released and how many people could be affected by it.

Chemical maker Du Pont Co., on the other hand, refrained from including some information in its summary, citing terrorism concerns, said Art Burk, a senior safety fellow at the Wilmington, Del., firm.

This worst-case disaster information, from thousands of companies, is expected to get a lot of attention because of the fear of accidents as a result of the year 2000 problem.

But the scenarios are "out on the edge" and are very unlikely to occur, said George King, who works in process safety at The Dow Chemical Co.'s manufacturing plant in Freeport, Texas. Such a disaster scenario would involve a catastrophic physical release occurring within 10 minutes and under ideal weather conditions, he said.

Information system failures from Y2K problems and other sources may play a role in such a disaster, he said, but are far from being the only threat. "If you had someone shoot a missile through your tanks, you'd have a quick release of a large quantity," King said.

Companies were forced to prepare the worst-case scenario data under the federal Clean Air Act. Federal officials aren't opposing release of the data to local emergency preparedness officials; they just didn't want to make it easy for a terrorist to download it off the Internet and analyze it.

"It's madness," said Neil Livingston, CEO of Global Options LLC, a Washington security consulting firm. "This is equivalent of putting targets on things."

King admits that local emergency responders need the information but says he can't see why it should be posted online.

The U.S. Department of Justice, as part of the legislation approved by Congress, is preparing a study on chemical safety issues raised by the Internet. ◗

Random Sample of Some Worst-Case Scenarios

The EPA requires companies that handle hazardous substances to provide hypothetical worst-case scenarios. Year 2000 and other IT problems could contribute to such disasters. Summaries of such scenarios are located at the EPA's Web site (www.epa.gov); a public interest group has posted a searchable database of these reports at www.rtk.net.

Dow Chemical Co., Freeport, Texas

Worst case: 24,750 lb. of phosgene (carbonic dichloride) is released. Used in World War I as a poison gas, phosgene is used in chemical synthesis. Mitigation systems would force any leak to exit the building through scrubber systems. The gas could, under certain atmospheric conditions, travel 20.5 miles before toxic end-point is reached. Anything beyond that wouldn't affect the public.

Alcoa Inc., Massena, N.Y.

Worst case: An uncontrolled release of material from a chlorine cylinder could potentially affect about 10,000 people, neighboring schools, hospitals and airports. But Alcoa has never had a chlorine release, has numerous safety systems to safeguard against accidents, and said in its EPA report that any of its release scenarios "are extremely unlikely."

Data Center System Cloned for Y2K Testing

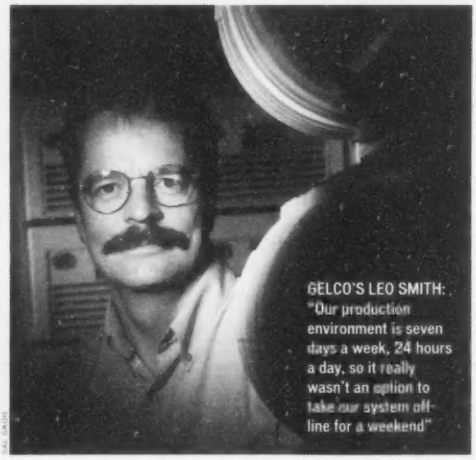
Prospect of losing customers leads to costly duplication

BY STACY COLLETT

Most Y2K project managers would agree that the only thing worse than having one corporate information technology system to test for Y2K problems would be having two.

Not so for Gelco Information Network Inc., a travel expense and promotion management outsourcing firm in Minneapolis. The company was determined not to let Y2K testing interfere with its computer data center, which processes millions of expense reports for 2,000 companies worldwide.

So Gelco took the extraordinary step of cloning its computer data center, mainframe and all, at an off-site testing facility at a cost in the high six figures



GELCO'S LEO SMITH: "Our production environment is seven days a week, 24 hours a day, so it really wasn't an option to take our system off-line for a weekend"

"Cloning occurs in less than 15% of all companies," said Capers Jones, chief technologist at Software Productivity Research Inc. in Burlington, Mass.

Those that re-create systems are generally those that can't afford any downtime, he said.

"Our production environment is seven days a week, 24 hours a day, so it really wasn't an option to take our system off-line for a weekend. It was easier and more efficient to take it off-site," said Leo Smith, senior vice president of client services and manager of the Y2K project at Gelco.

Gelco spent four months going through lines of software code on its main systems, identifying date problems and renovating the code in the production environment.

Then, for 60 days it leased an IBM mainframe similar to the S/390 Multiprise 2000 Gelco had installed last year. To re-create its production environment, Gelco leased a Sun Microsystems Inc. UE4500 Unix server similar to Gelco's own Sun UE 10,000. It also installed five Windows NT servers to test proprietary applications. The applications usually run on 25 to 30 dedicated servers, but for testing the company installed a few applications at a time on each server, ran the tests, then uninstalled the applications and reinstalled new ones.

IBM and Sun technicians spent 20 days installing the system at an off-site location. Then 30 Gelco employees reinstalled applications and records from backup files, manipulated dates on the records to reflect Jan. 1, 2000, and ran tests for 35 days.

The result? IT staff detected 22 "minor issues," but the project was still worth the expense, Smith said.

Cloning systems for testing is usually a process that makes sense only for very large corporations like financial institutions, which have more to lose if a Y2K glitch brings down a system, said Steve Wirth, executive vice president at PC Solutions Inc., a network integration firm in Pittsburgh. "Many smaller companies can exist more easily on manual systems" when their information systems fail than larger corporations can, he said.

But smaller companies with around-the-clock production needs said cloning systems for Y2K testing beats bringing the system down. "We process payrolls every day, so for us that wasn't a possibility," said Cathy Casey, project manager at ProBusiness Services Inc. in Pleasanton, Calif., which also cloned its systems for Y2K testing earlier this year. ◗

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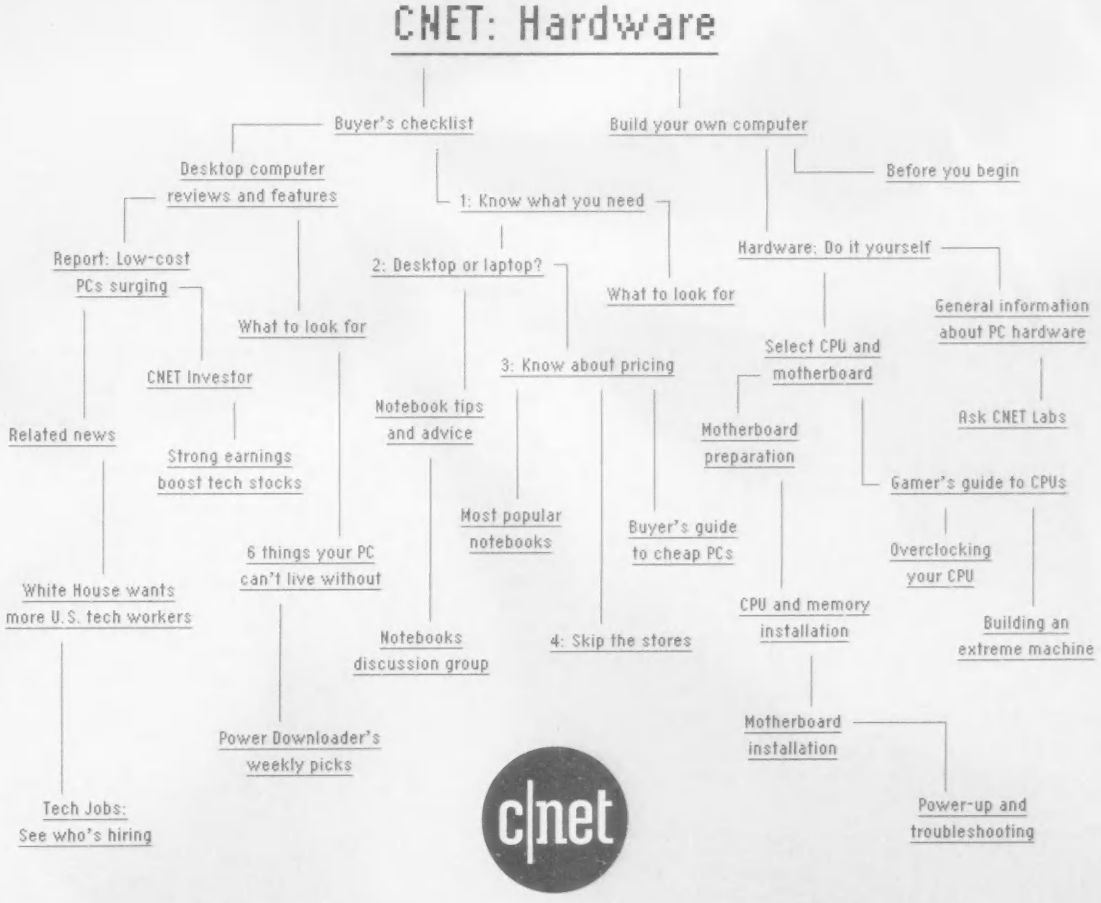

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Wall Street Spends Big to Compete With Online Rivals

Percentage of IT spending allocated for Internet projects nearly doubles

BY THOMAS HOFFMAN

Wall Streeters know what to do when they encounter a problem — throw money at it.

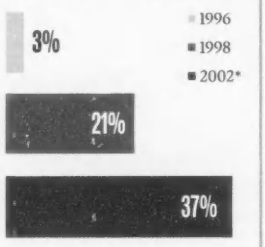
At least that's the solution many Wall Street firms are using to catch up to online rivals that have edged ahead of the giants that have long traded on technological superiority.

Spending on Internet, intranet and extranet projects is expected to mushroom to 37% of total information technology spending on Wall Street by 2002, according to preliminary results of a survey sent to 250 North American brokerages last May by TowerGroup on behalf of the Securities Industry Association. In 1998, only 21% of the average IT budget of securities firms was spent on such projects, the study shows.

The increase is largely to help traditional traders make up ground on online brokerages such as ETrade Communications Inc. and alternative networks such as Archipelago LLC, which are using discounts and ease of access to steer business away from investment houses such as Salomon Smith Barney, which have been slow to add online trading.

Spending Growth

Wall Street spending on Internet, intranet and extranet technologies as a percentage of total IT spending:



**Projected

SOURCES: TOWERGROUP, NEEDHAM, MASS.; SECURITIES INDUSTRY ASSOCIATION, NEW YORK

Results of the report are being finalized and should be released soon (*www.sia.com; www.towergroup.com*).

"There's a seachange [in the industry] due to the impact of the Internet," said Mike McEvoy, an analyst at TowerGroup, in Needham, Mass. Merrill Lynch & Co.'s stunning announcement in July that it will begin offering online trading capabilities to all customers by year's end is only one example of how old-school firms are changing, McEvoy said.

Last week, Merrill Lynch also announced plans to begin offering after-hours trading to its 5 million brokerage customers next year.

Alternative trading networks "are forcing [brokerages] to spend a lot more money to achieve real-time trades" for clients, said Charles Fleischman, managing director at Cantor Fitzgerald Partners in New York. Fleischman and his team recently rolled out a real-time risk credit system designed to help his firm quickly assess customer credit and the risks that various investments pose for customers.

Plus, the need to move information and make trades faster is forcing brokerages to buy bigger servers, higher bandwidth and more storage, said Elizabeth Weintraub, IT director at Bernard L. Madoff Investment Securities in New York.

Even the industry's online leaders continue to add to their portfolios. Last week, Fidelity Investments introduced a new set of online trading tools that provide more robust investment capabilities for both active and occasional trading customers. Fidelity's new Powerstreet services include a partnership with Waltham, Mass.-based Lycos Inc. that enables customers to personalize their Web start pages and control how they view their information, said Gary Burkhead, vice chairman of Boston-based Fidelity.

Indeed, most Wall Street IT executives say the bulk of their IT investments are shifting from back-office support systems to front-end systems designed to help customers do more research and place investments online. That's true even for institutional investment banks like ABN Amro Inc., whose customers are primarily other corporations. "We're placing much higher investments in front-end systems to support Internet trading with our institutional customers," said Ben Witt, senior vice president of operations at the Chicago-based firm.

But if they're going to catch up to online rivals, the giants of Wall Street have "quite a workload ahead of them," said McEvoy.

Firms Focus on Perfecting New ERP Systems

Work doesn't stop after installation

BY CRAIG STEDMAN

Some users of enterprise resource planning (ERP) applications concentrate on getting the software up and running before they start worrying about how to get the most out of their new systems.

Once the software is running, though, many concentrate on standardizing processes, adding functions and other means of perfecting the system.

When Brush Wellman Inc. installed SAP AG's R/3, for example, speed was a priority. The Cleveland-based manufacturer needed a year 2000 fix and wanted to replace a hodgepodge of stand-alone applications, so it didn't spend time re-engineering business processes or turning on the full breadth of the ERP software.

"We forced in the key things we needed and were very myopic," said Christopher Lynch, manager of manufacturing systems at Brush Wellman.

"We know right off the bat that there are objectives we haven't met," Lynch added. For one thing, Brush Wellman's shop-floor operations are still run by IBM AS/400-based applications, which don't let sales and service workers get status reports on the progress of orders through the plants.

To help decide what to do next, Lynch said, Brush Wellman is evaluating benchmarking services offered by SAP and some consulting firms. Among the goals: calculating the potential return on investments such as switching the plants to R/3, and determining whether it should alter business processes to fit the ERP system.

Colgate-Palmolive Co. recently began a similar post-installation effort to make its processing of R/3 transactions more consistent worldwide.

In June, the New York-based consumer products maker brought in business and information technology executives from several parts of the world for a walk-through of how its U.S. operations use R/3.

The idea was to stir discussion about how business uses of the ERP software could be standardized across the company, said Ed Toben, CIO at Colgate-Palmolive. "We want to come up with our own best practices," he said.

Colgate-Palmolive finished most of its worldwide R/3 installation earlier this year, and the core ERP system is configured the same from country to country. But operating units were given leeway to set up their own local ways of doing things such as forecasting product demand, Toben said.

The June walk-through "was a test case on how we can do this," he added. The company is now trying to set up a more formal process for continuing the dialogue on using R/3.

Millipore Corp., a Bedford, Mass.-based maker of water-filtration equipment and other products, has used Oracle Corp.'s applications since 1990. But it's now in the midst of a major makeover aimed at unifying the ERP system throughout its worldwide operations.

Bertrand Loy, vice president of information systems at Millipore, said the plan is to merge the company's six regional application installations into a single global setup by late next year. That should reduce IT costs and give business managers a more consistent view of customers and sales, he said.

But changing an entrenched ERP system isn't easy, Loy added. Financial records differ greatly from region to region, and it's taking about six months for Millipore's business units to create a common accounting structure. "It gets very sensitive," he said.

ERP Performance

SAP and some consulting firms are starting to offer R/3 benchmarking services:

- IMG Corp. in Switzerland, sells tools that extract business-performance data from R/3 systems and measure the results against other users.
- SAP last spring announced ValueSAP, a consulting program that helps users calculate ROI and measures performance after going live.
- Deloitte Consulting last month said tools and services that would optimize installed R/3 systems will be launched in North America this fall.

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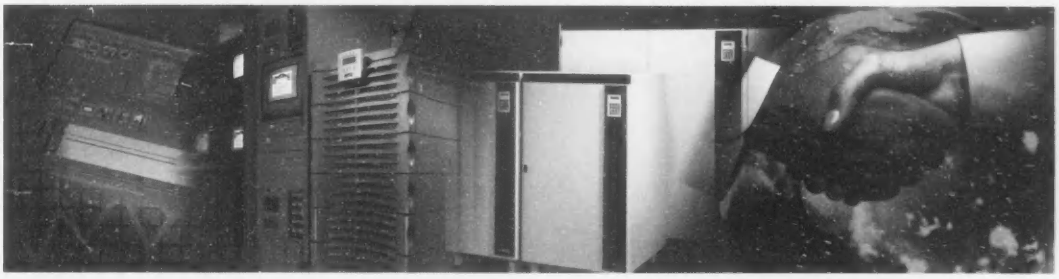

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Supply Chains Puzzle Retailers

Many see little benefit from automation's promise

BY DAVID ORENSTEIN

FEW COMPANIES would be surprised to hear that IT is crucial to improving their supply chains, but most don't realize that they may not be getting the efficiency boost they expected from investments in supply-chain automation.

That odd dichotomy stood out among many findings in a report presented last week at the National Retail Federation's supply-chain management conference in Philadelphia. Because they are at the consumer end of the supply chain and often deal with thousands of suppliers, retailers are sensitive to inefficiencies in the supply chain.

"The thing that is going to differentiate a company is the effective use of IT," said Laurie Widder, a senior manager at KPMG Peat Marwick LLP, which conducted the study with MIT. But the report found that more than two-fifths of 190 companies from a variety of industries have seen no overall improvement from information technology investments in their supply chain. "It's pervasive," Widder said.

Some companies don't measure their supply-chain performance rigorously enough to identify any benefits, and others don't adjust their business processes to fit the technology they have implemented, the report found.

Widder said many companies measure only inventory levels, turnover and other basics, not higher-level functions like service levels and whether shipments match demand.

But users said that unless they focus on specific areas, it can be very time-consuming to benchmark something as complex as the supply chain.

MENDELSOHN: Groundwork has been laid for improvements

Longs Drug Stores in Walnut Creek, Calif., has measured supply-chain success, but on a purposely limited scale, said CIO Brian Kilcourse. The company has concentrated its efforts on its pharmaceutical distribution center because prescription drugs are high-value items. Using a system from Non-Stop Solutions in San Francisco, Longs conducts quarterly reviews of the stock levels in its distribution center and the accuracy of its merchandise delivery to stores. The software provides a forecast of what each store needs. That payoff might take a while at many companies.

A study published in March by International Data Corp. in Framingham, Mass., found that companies need about five years just to reach the early stages of use for a supply-chain package.

Petsmart Inc. in Phoenix has cut travel time and costs by 60% and decreased inventory by 20% by rolling out its SourcingLinks extranet to standardize trading and product development with international suppliers. But otherwise, said CIO Jake Mendelsohn, the company has laid only the groundwork for supply-chain improvements with a rollout of SAP AG's retail package over the last couple of years. Concerning return on investment, "It's the early stages for us," he said.

MOREONLINE

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D. Free distribution by mail, carrier or other means, samples, complimentary and other free copies		
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3. Other classes mailed through the USPS	0	0
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G. Total distribution (Sum of C and F)	253,339	261,846
H. Copies not distributed	659	600
I. Total (Sum of 15c and 15f – should equal net press run shown in A)	253,998	262,446
Percent paid and/or requested circulation (15C/15G x 100)	92.69%	95.77%

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Robert Wescott
Distribution Manager

Service Gives Boost to Speech Apps

Tool kit key to voice recognition Yellow Pages

BY MATT HAMBLEN

A Minneapolis start-up plans to kick off a voice recognition Yellow Pages directory next month, 18 months after it began developing it.

The service is one of many speech applications being developed with recent improvements in speech-recognition software and development tools that are easier to use, analysts said. The service, Call FYI by VMS Inc., will be free to callers in the Minneapolis area; businesses will pay $460 annually to be listed on the service, VMS officials said. Eventually, the company will roll out the service to other cities.

DARIN KALLAND: Call FYI was an easier tool to use than competitors' products he tested

The system, now in a final beta, allows a caller to ask, in natural language, for a business category. Next, businesses are listed alphabetically until a user orders the system to stop. A prerecorded voice then plays the address and phone number, plus a 12-second recorded advertisement.

Darin Kalland, director of operations at VMS, said building Call FYI was laborious until about nine months ago, when Unisys Corp. provided its Natural Language Speech Assistant (NLSA) tool kit as a free beta to VMS. Unisys announced Sept. 13 that it will be packaging a speech recognizer from Microsoft Corp. with the tool kit. NLSA also works with recognition software from various companies, such as IBM and Sun Microsystems Inc. It is the only open tool kit so far, said analyst Jackie Fenn at Gartner Group Inc. in Lowell, Mass.

Fenn said interest in speech-recognition applications has blossomed in the past six months because recognizers now can more accurately decipher phrases and sentences and not just single words.

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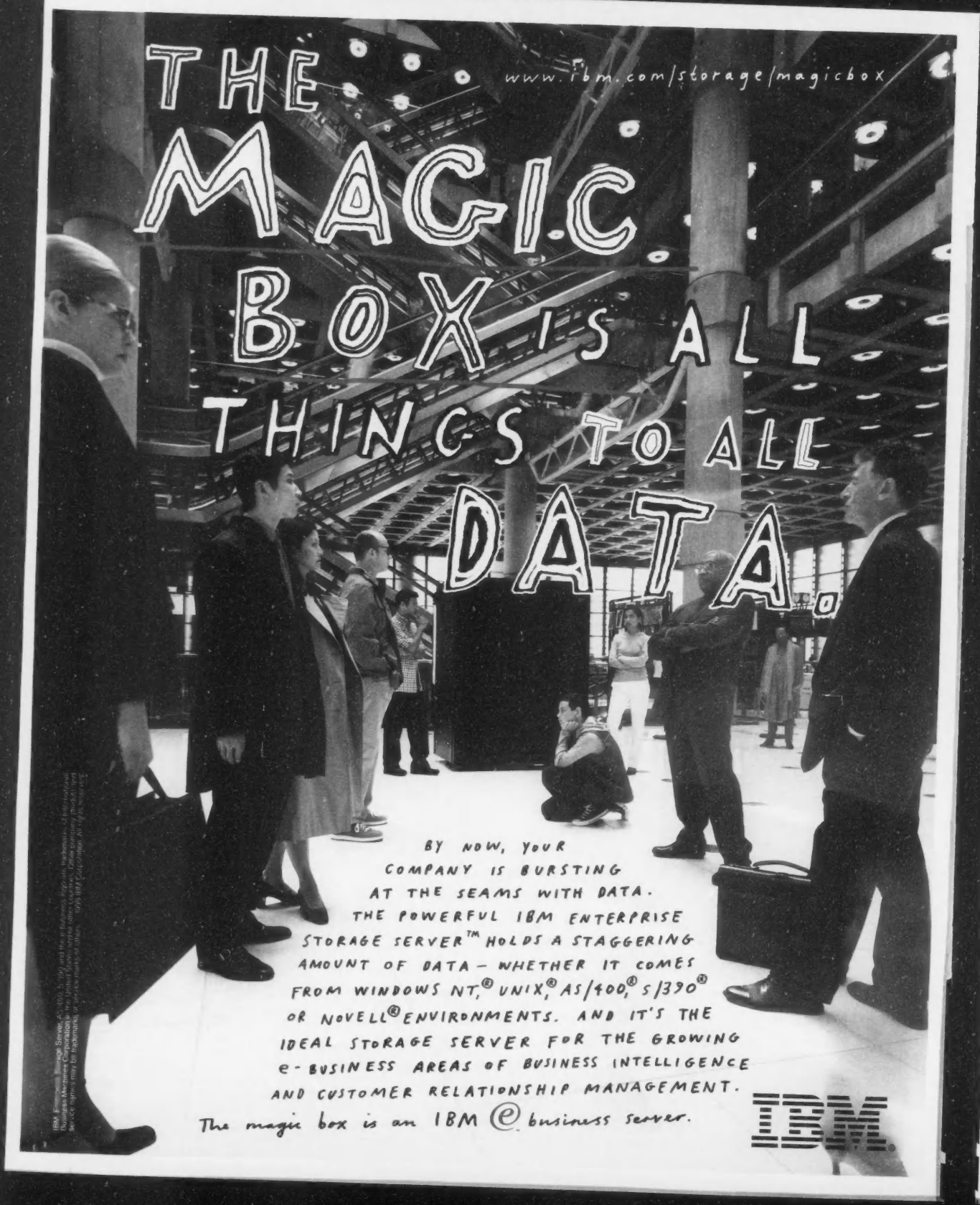
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Human Interaction Key to Knowledge

Knowledge management often fails without live communities of interest

BY DOMINIQUE DECKMYN

SINCE THE CONCEPT of knowledge management emerged in the early '90s, many ambitious knowledge management projects have failed. Users and analysts now say an overemphasis on technology has often been to blame. The secret of success may be to promote human interaction, not technological interfacing.

"What has happened in the past is many people have decided to put in Lotus Notes or a search engine, but technology alone is not solving the problem," said Wayne Applehens, an author and manager of the knowledge information systems group at enterprise resource planning vendor J. D. Edwards & Co. in Denver.

One approach that has proved effective in many companies is to set up so-called communities of practice, which allow workers to share knowledge on a particular topic such as e-commerce. Information technology can provide the infrastructure to help the groups communicate. But the main goal is to enable person-to-person communication, said Skip McDonald, vice president of knowledge management at Align Solutions Corp. in Dallas. If this communication happens in a public forum, such as a threaded discussion rather than by phone or e-mail, that's an added advantage, McDonald said.

Fairfax, Va.-based consultancy American Management Systems Inc. (AMS) started setting up communities of practice for its technology research department in 1993. Each community is led by a generally recognized thought leader who typically spends a cumulative total of three or four weeks per year working on maintaining the community.

Workers who contribute a lot to the community are rewarded with high visibility within it. But, increasingly, companies are realizing that financial incentives may also be needed to jumpstart the knowledge exchange or to keep it going.

"If you want to change people's behavior, change the incentive program," said Susan Hanley, director of knowledge management at AMS. ◗

Handheld Help For Clinical Trials

BY MATT HAMBLEN

One of the latest specialty applications for the PalmPilot handheld from Palm Computing Inc. is a product to track a patient's health for clinical trials.

PHT Corp. in Boston has written a digital diary application for the Palm called the PlexxNet Patient LogPad. It's for patients to record reactions to experimental medications and how they feel several times per day during lengthy clinical trials.

The data is simpler to enter than writing out a diary and is recorded when a patient feels pain or has a reaction to a drug. The data is closer to real time than a written diary and more trustworthy because patients report reactions just after they happen instead of trying to recreate them days later, said Gilbert Fanciullo, director of the Pain Management Center at Dartmouth-Hitchcock Medical Center in Lebanon, N.H.

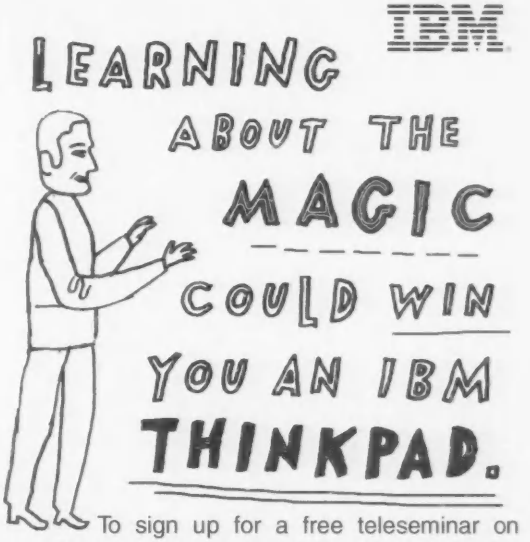
"But the economics is the No. 1 advantage of the LogPad," Fanciullo said. Written diaries have to be transcribed, which is an expensive and error-prone process.

Dartmouth-Hitchcock is paying PHT $30,000 for 10 handhelds and management of the data, so the center can submit a study to federal officials for approval of a spinal cord stimulating device for treatment of chest pain.

The cost of the digital diaries is comparable to the cost of paper diaries with 10 patients involved, but in trials with 100 patients, costs could be one-fifth of paper costs, Fanciullo said. The trial began this summer and will take 10 months, allowing patients to monitor pain and how the stimulator affects it.

Food and Drug Administration (FDA) officials have long been suspicious of the reliability of written diaries, especially because patients often fill them out days after taking medication and just before turning in the diaries, said Gerald Meyer, a former deputy director at the FDA and a drug industry consultant in Potomac, Md.

Patients in clinical trials have used laptop computers for diaries, but the PalmPilot is more convenient for patients, Meyer and Fanciullo said. ◗



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WORKSTYLES

IT Workers Looking for Balance

Getting paid top dollar isn't always the top goal among IT workers. Yes, they still like getting paid, but the balance between life at the office and life beyond the office has become vital to how long workers stay at a firm. The better the balance, the longer they stay, according to recent studies on staff retention in information technology.

Many CIOs now recognize the need to add programs and allow workers flexibility in their duties, according to a recent survey conducted by RHI Consulting in Menlo Park, Calif. RHI asked 1,400 U.S. CIOs how important flexible hours and other life-balancing programs are to retaining staff compared with five years ago. Only 12% said such programs aren't more important today. The study also found that flexible hours and personal paid time off were big hits with IT staff: More than 70% of the CIOs surveyed said they offered those benefits.

"Employers have begun to make the workplace friendlier to help balance work and home life," said Kristin Accipiter, a spokeswoman for the Society for Human Resources Management in Alexandria, Va. The society's annual survey of workstyles shows significant increases in flextime, telecommuting and compressed workweeks (see chart).

Employers are even offering exotic-sounding activities to create a friendlier and less-stressful atmosphere, with massage therapy and nap rooms beginning to pop up in corporate America, Accipiter said.

SAS Institute Inc., a Cary, N.C., software developer, has seen efforts to build a worker-friendly culture pay off. For several years, SAS has provided flex hours, on-site day care and health care centers, a piano café and a huge fitness center, and it has a yearly staff turnover rate of about 4% to show for its efforts. That's far below the 20% computer industry average. Jeff Chambers, a human resources manager at SAS, said that keeping turnover rates so low saves the company "approximately $50 million per year in retraining expenses."

"When you treat employees like adults and engender trust in people, it helps build a solid relationship with them," Chambers said. SAS also tries to make sure it stays aware of employees' needs by paying particular attention to a worker-led Best Practices task force that makes workplace and human resources recommendations.

Eva Fujan, vice president of technical recruiting at Inacom Corp., an Omaha systems integrator with 11,000 employees, said employers have discovered that "good pay isn't enough any more for the technical workforce. Work and the workplace has become a whole life issue."

Flex hours, job sharing and telecommuting are all part of Inacom's offerings that help foster the idea of a healthy family life, and the company strives to include families in its workday world. "When they need to, you frequently see people bring one of their children into the office. It's actually nice to see that side of people," Fujan said. Inacom also sponsors sports teams and events for kids throughout the year and encourages employees to bring along their families to annual company meetings.

To include families in the annual meeting's festivities, Inacom's chairman walked around during the awards dinner and asked kids what their parents should receive awards for. "It was wonderful," Fujan recalled. "The kids loved it, the parents loved it, everyone loved it." – *Stewart Deck*

Techs Demand More Flexibility

Companies that offer:

	1997	1999
Telecommuting	20%	28%
Flexible time	46%	53%
Compressed workweek	22%	25%
Job sharing	21%	22%

Base: Survey of 7,500 random business members

SOURCE: SOCIETY FOR HUMAN RESOURCES MANAGEMENT, ALEXANDRIA, VA

PAUL A. STRASSMANN

The knowledge fuss

WHY ARE MANAGEMENT GURUS and IT folks turning knowledge management into the latest launching pad for boosting careers, pitching software and selling conferences? There are reasons for every trend, and the reasons for this one are clear. *Just follow the money.*

Money Clue No. 1: The exuberant stock market. We are living during the largest stock market price bubble in history. According to my calculations, at the end of last year, the total stock valuation of 6,153 U.S. firms was $13.7 trillion. Because the median financial capital worth (e.g., book assets) of the top-ranking 25% of corporations accounts for only 14% of their market worth, the remaining 86% must be rationalized somehow. "Knowledge capital" offers a handy answer. To keep those stock valuations rising indefinitely, the experts recommend the art of managing knowledge. For a fee, consultants will happily help firms boost their knowledge assets. Some say knowledge management could increase the Dow Jones industrial average tenfold and make Bill Gates the first trillionaire — just check out the September issue of *Wired* magazine or the popular recent book entitled *Dow 100,000: Fact or Fiction?*

Money Clue No. 2: The rediscovery of data management. For all practical purposes, there are hardly any profits left in selling PCs. Enterprise resource planning rescue missions have become economic liabilities. So what can computer vendors do? They'd love to launch the next trillion-dollar wave of new systems. But the problem is that CEOs haven't gotten over the lack of verifiable evidence that the last IT investment cycles boosted profits or delivered on promised gains.

Knowledge management to the rescue. Vendors know data management has always been a CIO's job. Point-of-sale devices, Internet visitations and e-commerce transactions are spewing data at gigabyte-per-second rates. With knowledge management, proponents of new spending can argue that making employees smarter is the next big thing, and managing all that data naturally falls to the CIO. Increasing a firm's intellectual assets is hard to argue against and offers an attractive platform from which to refloat shelved projects.

Money Clue No. 3: Attracting conference attendance. Conference prices are an indicator of the perceived worth of a newfangled topic. Conference organizers find it lucrative to promote knowledge management to eager MBAs seeking the executive suite. Last time I saw anything comparable was at the height of the re-engineering craze. So I was intrigued to see that "nuke them" re-engineering guru Michael Hammer — who once called for eliminating middle managers despite the knowledge they've accumulated — is holding knowledge management conferences. A two-day seminar costs $2,400, or about $300 per hour per person. These prices and the "if it costs that much, it must be worth it" mentality that justifies them also legitimize knowledge management.

> Before you are swayed, insist that any 'knowledge management' system produce verifiable gains.

Management implications. Knowledge management has always been one of the principal managerial tasks. Peter Drucker said so 40 years ago, and that won't change even after current buzzwords are superseded by the next catchphrases. The capacity to generate knowledge capital has always been a means of achieving success. I have demonstrated why knowledge capital is more profitable than financial capital (*www.strassmann.com/pubs/measuring-kc*). Unfortunately, what passes for knowledge management applications invariably calls for overlaying short-lived technologies on top of the existing software junkyard. That is unlikely to produce lasting value.

Before you are swayed by the vendors and the hawkers, keep your sense of balance about such investments; don't be easily swayed. Insist that any "knowledge management" system produce verifiable gains in your company's earning capacity. That's the only way to distinguish between a passing utopia and the capacity to deliver increased economic value.

Strassmann (paul@strassmann.com) is finishing his next book, Information Capital — Assessing the Intellectual Worth of U.S. Corporations, *which is scheduled to be released in the spring.*

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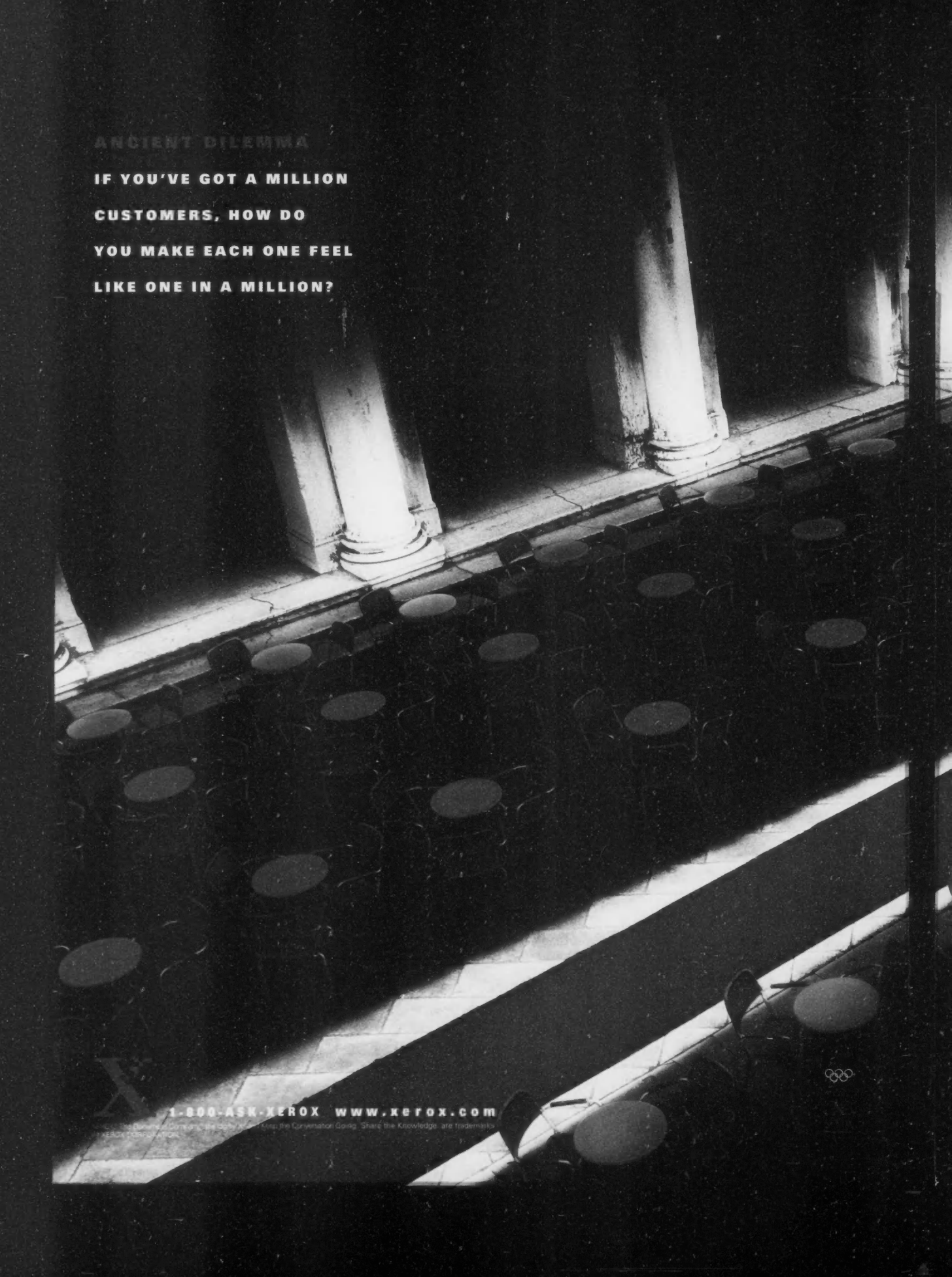
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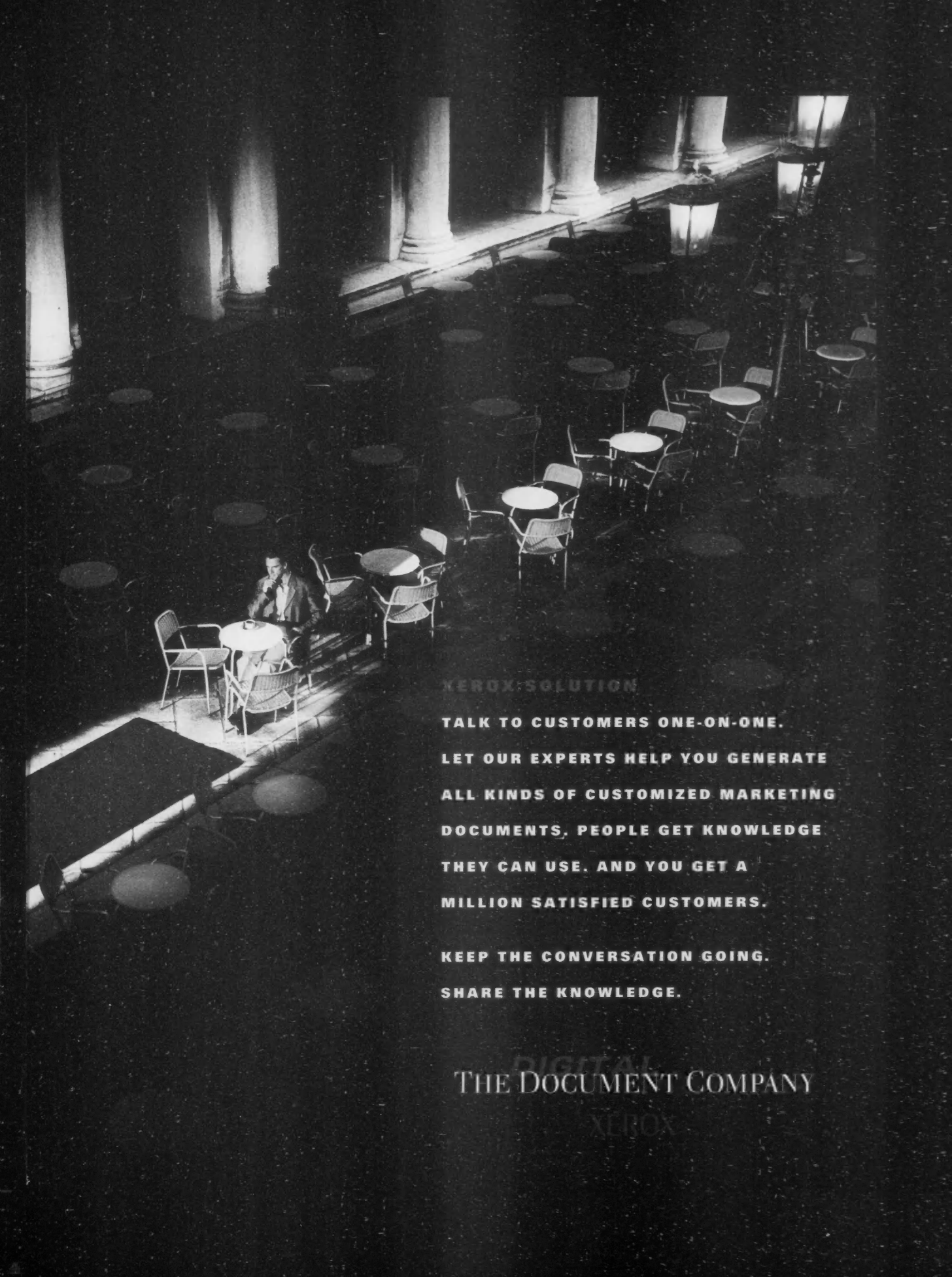
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Backup Pla FOR Backup Pla

Are your Y2K contingency plans based on unrealistic assumptions? Many companies are finding the answer is yes By Kathleen Melymuka

JOHN WYLDER thought year 2000 contingency planning was going to be a snap. "I had been in contingency planning for years," says the Y2K project director at SunTrust Bank Inc. in Atlanta. "I knew we had tested them every year." With a little tweaking to adjust the existing plans for Y2K, he recalls, "I was thinking this was done." But then a team from PricewaterhouseCoopers LLP suggested the bank take a second look. "I was thinking, 'We can't do better,' " he recalls. "But then we did some 'what-ifs,' and I saw it made sense to look at this a different way."

The second look resulted in an entirely new approach to Y2K contingency planning at the bank (see related story, page 52), and that experience isn't unique. Many year 2000 project directors are discovering that contingency plans that sound great in theory fall apart in practice.

"People are challenging assumptions they made," says Jim Jones, managing director of the year 2000 group at the Information Management Forum in Atlanta. "The reality is that a lot of things people think about [doing] are not viable options."

There are many lessons to be learned from walk-throughs, tabletop war games or just an examination of assumptions. If you haven't taken a second look, you may be counting on contingencies that won't work.

One of the most pervasive problems people discover with Y2K contingency plans is also one of the hardest to solve. "The biggest thing we found in test after test is the problem of timely, accurate and well-coordinated communication," says Sara Jane DuPree, manager of business continuity and disaster recovery planning at Delta Air Lines Inc. in Atlanta.

People who develop the plans are thinking of the big picture, she says, not of the person who is supposed to receive critical information and pass it along. "The devil is in the details," DuPree says.

For example, a flight plan, which contains critical data about the weather, route, fuel and cargo, must be in the pilot's hands by a certain time, or the flight will be late. If the plan for a flight out of Kansas City normally comes

from Atlanta via computer, the contingency plan may call for faxing the multipage document in the event of computer failures.

But if people haven't walked through a drill, those on the receiving end may not know that the information is being faxed — or if they do, they may not know which fax machine it's being sent to, or they may miss a crucial page when they pick it up. "Multiply that by 625 flights a day, and you've got a potential problem," DuPree says.

"You've got to have that communication and sequencing and timing and accuracy all down real pat to make it work," she explains. "It's going to take a combination of training, refined manual processes, exercises and drills."

The Stockpiling Myth

Among the first bubbles to burst in many plans has been the notion of stockpiling to alleviate supply-chain worries. "Originally, we ran under the assumption that we might stockpile inventories," says Chas Snyder, vice president of applications delivery and Y2K project director at Levi Strauss & Co. in San Francisco. "That provides some blanket insulation from disruption of the supply chain — at least upstream."

But the more he thought about it, the more impractical a stockpiling solution seemed. "To build up inventories effectively, you have to really be able to assign risk to various suppliers or countries, and that's extremely difficult to do," he explains. "So unless you build in excess inventories across the product line . . . it doesn't make sense."

For a company the size of Levi Strauss, stockpiling a little of everything is prohibitively expensive, as well as culturally confusing, he says. "We pay people lots of money and have lots of software to do inventory management [to avoid overstocking], and we'd be turning around and asking them to walk away from that."

Ultimately, Snyder decided that dealing with the relatively few supply-chain problems he anticipates will probably be much less disruptive than major stockpiling.

Y2K SPECIAL REPORT

The Y2K team at Cargill Inc., a Minneapolis company that supplies ingredients to companies such as PepsiCo Inc. and Kraft Foods Inc., has found other reasons why stockpiling won't work. "We can't do a whole lot of stockpiling on our side till our customers figure out demand at the stores," says Gary McGee, manager of the year 2000 project office.

That process is taking a lot longer than anticipated, and the longer a company waits, the less likely stockpiling will be an option, he says. That's because the transportation industry is tuned for current demand and will already be stretched thin as companies stock up for holiday season sales. "There's not a lot of excess capacity," he says, "and any that there is is getting sucked up pretty quickly."

Yesterday's Plan

Another lesson is that what worked yesterday may not work tomorrow.

At Progressive Insurance Co. in Highland Heights, Ohio, the original Y2K contingency plan called for backup generator power in a certain building from late December to mid-January. In the event of a power outage, key technical people would remain in the building, but noncritical employees would move out, giving their space to about 350 critical people from areas like claims support. A similar plan had worked well during a storm in 1993.

But as he began to make preparations, information services executive Dennis Sutcliffe learned that a lot had changed since 1993. "We had assumed that space was almost free," he says. "It's not."

In 1993, many people at Progressive worked at IBM 3270 terminals; now they all have PCs with different configurations and desktop applications. "We're looking at upwards of $1,300 a seat to convert," he says. And that doesn't even include the cost of rerouting telephones.

When the cost of moving people became apparent, the number of contingency seats in the plan dropped from about 350 to 120.

Furthermore, what if the power stays on? "If there's no problem that first weekend, how long do you keep that setup?" he asks. "We've got the people who come to that building routinely. Do they sit there with two computers on their desks? Do you keep that contingency phone routing for two weeks even if it's disruptive to people trying to do their normal jobs?"

Revisiting the contingency plan has been "a real nosebleed," Sutcliffe says, and he's still working out details. But at least it's happening now instead of in January.

Y2K teams are learning that writing down a plan doesn't make it work. As businesspeople at The Pillsbury Co. in Minneapolis worked on contingency plans, it soon became apparent that they were only scratching the surface. "As we looked at moving the call center, people were assuming they would have dial-up capability from their computers," says Nancy Mitchell, senior business analyst. "Well, that doesn't just happen."

Make It So

People in business units often don't realize that many things have to fall into place to achieve the outcome you need, Mitchell explains. "You have to have security; you have to have the right kind of phone line. There are only so many ports. You have to order cabling," she says.

"The reality of actually doing the work is so much more complex than you think," she adds.

Mitchell says it's essential to plan for critical business processes instead of looking at Y2K issues by department. "People need to clearly define the

Backup plans, page 52

PILLSBURY'S NANCY MITCHELL: "Just because you may have read about a solution doesn't meant it's a good solution"

Friendly Skies?

43% of more than 1,000 adults polled in late August by The Gallup Organization in Princeton, N.J., say they will avoid air travel on or around Jan. 1.

35% of that same group believe air traffic control systems will fail (down from 46% last December).

In Banks We Trust

48% of Gallup poll respondents believe banking and accounting systems will fail, possibly causing errors in paychecks, government payments or other automated financial transactions (down from 63% in December).

Early Looks at Y2K

75% of 144 respondents in a Cap Gemini America LLC poll in August have experienced a "year 2000-related failure."

Less Faith in IT

12% of top managers in the Cap Gemini poll say they are content to delegate Y2K contingency planning to information technology departments. That's down from 35% last October.

Combat Pay

47% of 272 organizations will give extra pay or time off to employees who have been asked to work or make themselves available during the New Year's weekend, according

Polls, page 53

Different Viewpoint

Sometimes a close second look at contingency planning results in a totally new approach. That's what happened at **SunTrust Banks** in Atlanta when PricewaterhouseCoopers suggested that the bank rethink its plan from the customer's angle. "Now that we've done that, it's a much improved plan," says year 2000 project director **John Wylder.**

For example, if the bank's check-cashing system were to fail, the original contingency plan detailed how to get it back up. The new plan details how to serve customers in the meantime.

"Now we look at the impact in the teller line," Wylder explains. "They need manual procedures. You have to empower your employees."

Another example: If the bank's toll-free number goes down, customers will probably dial direct; but will the people who answer the calls know what the toll-free operators know? "Well, now they do," he says.

What the bank learned from its second look applies to any business, Wylde: says. "Instead of looking at how you recover a computer system or relocate if the building burns down, you look at how you get your product or service out. It's a better way to look at your business."

This new approach wasn't difficult, he says. "Once we started the analysis, the answers were easy. You just have to empower your employees."

— Kathleen Melymuka

Continued from page 51

critical business process, get down to basics and really talk to everybody who supports that process."

To facilitate that, the Pillsbury Y2K team now sits in on business continuity planning sessions. "As they bring the different functional pieces together, we [explain] what the dependencies are," she says. "They say they'll use satellite phones. Well, it's not that simple. They're very expensive, and you don't just go out and get one. They are impacted by weather, and it will be winter; if it's snowing, they don't work well.

"Just because you may have read about a solution doesn't mean it's a good solution," she says.

Keep It Fluid

Some organizations have built in second looks and more by designing evolutionary change into their contingency plans.

The Social Security Administration had its first contingency plans in place almost a year ago, but because the agencies with which it interacts have been far behind, it has had to continually update contingencies based on what others are planning.

For example, the plan for ensuring continuing payments to Social Security recipients has changed as the administration has worked out details with the U.S. Department of Treasury and the Federal Reserve Board. "The approach we took is to update and revise our plans quarterly," says Bob Vaccaro, Y2K project director.

The bottom line: Walk through your contingency plans to ground them in reality, and don't get so hung up on being "finished" that you set things in stone.

"When people say, 'Are you done?' I say, 'We've got the first round done,' " says Cargill's McGee. "But contingency plans will remain open right on into the year 2000."

Are Your Contingency Plans Realistic?

These three scenarios may help you critically assess your company's Y2K backup plans:

Key Vendor Not Y2K-Compliant
Contingency plan: Switch to compliant vendor.
But what if:
- You can't find one on short notice?
- The vendor can't meet your product specifications?
- The vendor doesn't accept your conditions?

Alternate approach: Work with original vendor to ensure compliance.

Offshore Supplies Halted by Nationwide Transportation Disruptions
Contingency plan: Stockpile offshore supplies in advance.
But what if:
- You're unsure which countries and vendors are vulnerable?
- Alternative transportation isn't available?
- Warehousing costs are prohibitive?
- Stockpiled items have a short selling season?

Alternate approach: Work with offshore suppliers on their own contingency plans, move items as far along the pipeline as possible or arrange to take early deliveries.

Computer Network Fails
Contingency plan: Communicate by phone and fax
But what if:
- There are no up-to-date fax directories?
- There are no procedures in place for sending, collecting, collating and delivering faxes?
- The machine malfunctions and no fax technician is on duty?

Alternate approach: Walk employees through fax drill to determine logistics and tasks in advance.

— Kathleen Melymuka

When the millennium officially arrives, will harried Y2K staffers finally be able to let it all hang out? Not exactly By Jill Vitiello

NOT SINCE CINDERELLA'S CURFEW has midnight meant so much.

Many information technology professionals at U.S. companies — from the smallest to the largest — are confident that their year 2000 fixes will let them ring in the new year with no major computer catastrophes. But what happens next? Experts indicate that IT professionals who have worked on Y2K initiatives hold the glass slipper.

Companies with operations in a single time zone that are well prepared for the year 2000 rollover expect midnight to come and go without incident. "I'll be sitting in my office, waiting to see if the phone rings," says Mark Higgins, director of information services at Sea Pines Co., owner of the Sea Pines Resort on Hilton Head Island, S.C., and the second-largest real estate company in the state.

Companies with a national or global presence, however, have systems in several time zones. "Which midnight?" asks D. C. Davis, year 2000 program manager at AlliedSignal Inc. in Tempe, Ariz. "We're a global company." The first AlliedSignal site to experience midnight 2000 is in New Zealand. That's 6 a.m. Dec. 31, at the company's headquarters in Morristown, N.J., and 4 a.m. at its Y2K program office in Tempe.

AlliedSignal will run several corporate crisis management centers around the world, staffed by some of the more than 1,000 IT professionals and business-unit experts who have worked on

After Midni

the company's Y2K initiative. "We have command centers and backup centers that will monitor the rollover," says Davis. "We'll have other people at the local sites calling in to say all is well and to verify the safety and security of our plants." A phone list, including everyone from the hands-on IT professionals right up to the chairman, is already prepared to report and track incidents if they occur.

With so many employees on alert for the rollover, it is a much different scenario than when Davis was named Y2K program manager in 1995. "When I began working on Y2K, people would ask me what the initials 'D. C.' stood for," says Davis. "I'd tell them it means 'Doomsday's Coming.' But that was just to get their attention." Obviously, it worked. Competitors and consulting firms say they admire AlliedSignal's Y2K preparedness.

It's a similar story at The Prudential Insurance Company of America in Roseland, N.J. "We'll be watching 24 hours of midnights with every longitude that rotates into the new year," says Irene Dec, vice president and global year 2000 program manager.

No matter how many time zones they have to monitor, not many Y2K pros are planning to sleep through this new year. The big day will begin early Friday, Dec. 31. "Our program office will be performing 'wellness checks,' aggressively looking for any potential problems," says Rich Harris, assistant vice president in charge of the Y2K program at Allstate Insurance Co. in Buffalo Grove, Ill. Once business continuation is verified, most program offices will go on to test systems.

Y2K SPECIAL REPORT

The Morning After

Even if they arrive on the other side of midnight unscathed, the nation's Y2K program offices will still have work ahead of them. Most will remain vigilant, preparing for other significant

MARC MURDOCK

ALLSTATE INSURANCE'S Rich Harris expects to continue "wellness checks" through January

dates such as the first end of the month (Jan. 31), leap day (Feb. 29) and the end of the first quarter (March 31). Harris expects to continue wellness checks through January as year-end processing is completed. "Our team will be involved in ongoing documentation, retention and storage," he says. Most of the 25 IT staffers who have been dedicated to the Y2K office will continue on until June 30 — the date the office is scheduled to close.

Davis describes AlliedSignal's Y2K efforts as a three-phase approach. His team of 10 professionals has responsibility for assuring Y2K compliance at all AlliedSignal sites around the world in each of the phases.

The first phase was Y2K project management, when the company worked at the business-unit and corporate levels to solve computer-related problems. The second phase was crisis management, in which the company tweaked its existing business continuation plans and added contingency plans to cover risks it couldn't directly control. The third phase is cleanup management, "the remediation of things that may have been missed," Davis says. He expects to shut down the Y2K office April 1.

"We won't dismantle our Y2K office in the first quarter, but we will pare it down greatly," says David Geiver, senior technology officer at First Premier Bank in Sioux Falls, S.D. He anticipates that most of the 15 IT staffers will once again devote their energies to their full-time jobs by mid-January.

Once they have danced at the ball, what jobs will satisfy Y2K team members when the program office closes? The assignment that looked so dicey now has incredible cachet. "The Y2K credential will get attention and respect on a worldwide basis, much like a college degree on a résumé," says Geiver.

IT professionals with experience on Y2K initiatives gained valuable project management experience and worked with people in all areas of their organizations. As a result, they "are in hot demand," according to Harris. "A lot of our folks view Y2K as a stepping stone for the opportunity to compete for harder jobs," he adds. ◗

Vitiello is a freelance writer in East Brunswick, N.J.

Happily Ever After For Y2K Contractors?

The Y2K initiatives of most U.S. companies have depended on the programming and project management hustle of thousands of information systems contractors.

Now that the party's almost over, what happens to them?

"There may be something of a glut" of Cobol programmers in the marketplace, says Scott Parker, general manager at the Grand Rapids, Mich., field office for Manpower Technical. Some contractors are transitioning to full-time employment, he reports. Others are picking up skills in the new hot areas such as SQL, Visual Basic and Java. "Companies that viewed the Y2K correction as a necessary evil are looking forward to getting into more innovative technologies such as e-business," he says.

Many Y2K contractors have already landed new assignments. Eddy Swain, a Manpower Technical contractor, recently finished a one-year stint at American Savings Bank in Honolulu, where he led a project to develop and roll out Y2K-compliant versions of teller and platform account systems. Now, Swain is working on another yearlong contract to build the bank's corporatewide internal messaging system.

Even though his Y2K-related obligation is over, Swain will be at the bank's command center during the midnight rollover. "I'm expected – as the guru of branch systems – to be there so that if something were to go wrong, I'd be the first level fix," says Swain.

– *Jill Vitiello*

Continued from page 51

to an August poll by human resources consultants William M. Mercer Inc. in New York.

Closing the Door

◗ **36%** of firms in the Cap Gemini poll are "very likely" to stop doing business with noncompliant business partners. That percentage rose from 21% in May.

Trust, but Verify

◗ **89%** of firms in the Cap Gemini poll rank as "high" their need for third-party verification and validation of remediated code (up from 52% last December).

A Few Bugs

◗ **5% to 9%** of defective lines of code will remain after remediation and testing have been completed, according to Gartner Group Inc. in Stamford, Conn.

Swords of Damocles

◗ Last month, *Computerworld* asked Y2K professionals in 345 companies this question: What incentives is your company providing to year 2000 personnel who will be responsible for making sure your company's systems make the transition from 1999 to 2000?

Here are two of the answers we received:

- The privilege of returning to work on Monday, Jan. 3.
- You get to keep your job.

– *Compiled by Rick Saia and Laura Hunt*

ANNE McCRORY/JARGON JUDGE

Browser has begun to outlive its usefulness

I WONDER HOW MUCH longer we'll have browsers. No, I don't mean the application by which we view, skim and look over information on the Web. I mean the word itself.

Think about it: Browsers now do so much more than allow us to look at the documents and pictures stored on servers around the world. They let us chat with people. They let us buy things. They let us tap dynamically into data and work interactively with people and transactional computer systems all over the world. They make the Internet an active experience, rather than a passive one.

They're far more than devices that allow us to browse.

Browsers have been called just that since the whole concept of the Web was invented. Nearly a decade ago, Tim Berners-Lee used the term *browser* and the verb *browse* in his original papers proposing the Web. The term was being used regularly in newsgroups by late 1991. When Mosaic rolled out in 1993, it was called a browser. And, of course, that's what it was first used for.

At *Computerworld*, we trod gently on this new turf at first. We described what Mosaic *was* rather than calling it a browser. We said it was a graphical interface to the Web. A graphical front-end tool. A graphical viewer. Remember, this was just around the time when the Internet was text-only, and even Windows was in its relative infancy. Green screens and DOS-based commands and two colors (one for type, the other the background) were what most people were used to seeing on their computers.

The browser grew up with licensing to Spyglass Inc. for commercial distribution. Netscape later launched Navigator, and the Mosaic browser technology found its way to Microsoft, which used it in Explorer.

In fact, those product names — Navigator and Explorer — convey some browser functions nicely. A navigator steers a course — takes you where you're going — as does the window that is the browser and, today, the search capabilities on Netscape's Web site. An explorer investigates, travels, examines. Web users use the browser to do all of those things.

Yet people rarely call these browsers by their actual names. Instead, we ask each other, "Netscape or Microsoft?" The vendor name — especially in Netscape's case, and in Microsoft's in context — has become the term we use. The word *browser* is superfluous.

Does any high-tech jargon leave you steamed? Or smiling? Tell ANNE McCRORY, former *Computerworld* copy desk chief and now news editor. Contact her at anne_mccrory@computerworld.com.

But it's far from gone. Software companies announce "browser-based" products — ones that follow the Netscape/Microsoft browser metaphor. These products use hot links to take the user through the application. The screens have the familiar buttons so many of us now recognize — Back and Forward and Reload — at the top. Yet browser isn't really apt here either. Application users aren't browsing; they're doing work.

So if *browser* is to begin its demise with the coming e-commerce tsunami, what will replace it?

Since Netscape was purchased by AOL, it's premature to say that the Netscape/Microsoft brands will be the way we go. Something like *window* seems to be most appropriate, but it's too generic to distinguish between the Internet window and the many other applications — and windows within them — that you have up on your PC.

That leaves — Explorer? It could become the *Q-Tip* and *Kleenex* of the future browser world. Or, as we go for Internet access on disparate and ever smaller devices, we might not need a name for it at all — it will be called *Internet access*, pure and simple.

That would be my preference. But there's a chance that *browser* will never die. After all, *dialing* is still around, even as most of us use push-button phones.

But I have to say there's a difference between the two words. In fact, the other day I was out shopping, and I told a clerk that I was just browsing. I paused and felt like I'd uttered the wrong word. So it could be that my disorientation holds the answer to my own question. ◗

CONFERENCES

■ TECHLEARN '99: LEARNING IN THE DIGITAL AGE
Walt Disney World, Orlando; Oct. 31-Nov. 3.
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CONTACT: The Masie Center in Saratoga Springs, N.Y., (800) 986-2743.
www.techlearn.com

■ XPLOR (20TH GLOBAL ELECTRONIC DOCUMENT SYSTEMS)
Los Angeles Convention Center; Oct. 31-Nov. 5.
Focuses on issues surrounding digital documents.
COST: $1,100 by Oct. 22; $1,200 thereafter.
CONTACT: XPLOR International, (800) 926-3976 or (310) 459-0600; fax: (310) 459-0605.
www.vipmeetings.com

■ MAKING THE INFRASTRUCTURE CONNECTION
Wyndham Buttes Resort, Tempe, Ariz.; Nov. 1-3
Addresses infrastructure and operations challenges in corporate IT.
COST: $995 for Meta Group Inc. clients; $1,495 for others.
CONTACT: Meta Group in Stamford, Conn., (800) 945-6382.
www.metagroup.com/events

■ NEXT-GENERATION NETWORKS
Crystal Gateway Marriott, Wash.; Nov. 1-5
Examines the next business and technological stages of the Internet.
COST: $1,795.
CONTACT: BCR Enterprises Inc. in Westmont, Ill., (800) 227-1234 or (630) 986-1432; fax: (630) 323-5324; e-mail: registration@bcr.com.
www.ngn99.com

■ LISA '99
Washington State Convention & Trade Center, Seattle; Nov. 7-12.
Technologies, tools, approaches for system administrators.
COST: Varies.
CONTACT: Usenix Conference Office in Lake Forest, Calif., (949) 588-8649; fax: (949) 588-9706; e-mail: conference@usenix.org.
www.usenix.org/events/lisa99

■ I/T OUTSOURCING CONFERENCE
Hyatt Orlando; Nov. 9-10
Covers outsourcing topics, including offshore outsourcing.
COST: $1,095.
CONTACT: Digital Consulting Inc., (978) 470-3880; fax: (978) 470-0526; e-mail: ConfReg@dci.com.
www.dci.com/outsrc

■ AMR RESEARCH'S 13TH ANNUAL FALL EXECUTIVE CONFERENCE
Marriott Copley Place, Boston; Nov. 10-12
Electronic business strategies.
COST: $1,295, for clients; $1,495, for others.
CONTACT: AMR Research Inc. in Boston, (617) 542-6600; fax: (617) 542-5670.
www.amrresearch.com

■ EMERGING LEADER PROGRAM
San Diego Marriott Hotel & Marina; Nov. 14-19.
Skills development and insights for emerging and seasoned leaders.
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www.linkageinc.com

■ ORACLE OPENWORLD
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www.oracle.com/openworld

■ COMDEX FALL '99
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WEB HIRING GOES WILD

Pick an e-commerce job — it's in huge demand. So much so that e-commerce positions make up nearly all top jobs sought this quarter By Deborah Radcliff

COMPUTERWORLD'S THIRD QUARTER HIRING SURVEY

HERE'S SOME NEWS. Hiring managers are clamoring for Web skills this quarter. But they're not desperate for Web developers anymore.

With e-commerce taking off in just about every industry, information technology hiring managers now want seasoned professionals to turn their Web sites into moneymakers.

"Retail stores like the Gap, Ann Taylor, Nine West and Ethan Allen need to get their sites up and running competitively online. Everybody is screaming for knowledge of the business — those who understand how to grow the business philosophy in IT," says Lina Fafard, executive recruiter at Montgomery West, a search firm in Torrance, Calif.

Hiring managers need Web architects and designers to build and maintain their e-commerce backbones. They're also looking for back-office integrators to tie Web interfaces to their sales and accounting applications. And they need directors of Web infrastructure projects to provide strategic planning and electronic business strategists to provide marketing direction.

Then there are the detail workers — Internet security managers and Java developers. Even system administrators and application developers can expect to get a hefty amount of Internet exposure.

This is great news for people with Internet skills. Many of them can expect six-figure salaries, say job placement professionals. And they're in for raises that are twice as large as those of their non-Internet counterparts, according to *Computerworld*'s Third-Quarter Hiring Survey. Here's a sampling of what job placement experts consider to be the hottest jobs.

1. Position: Internet Technology Strategist

Responsibilities: Oversee integration of Web reporting, workflow, e-mail tracking, streaming, media content, integration, security processes and extranet. Provide competitive analysis and demonstrate flexibility to change strategy quickly if a Web application misses its target.

Salary: $85,000 to $105,000, depending on location.

Qualifications:

- Project management background.
- Skilled in some of the following: Visual Basic, C++, Java Script, Ole, TCP/IP, HTTP, file transfer protocol, Oracle, Windows NT, e-commerce servers.
- Overview knowledge of security, product delivery, inventory and building interfaces to the corporate structure.

Advice to hiring managers: "Most hiring managers want candidates who've already done this job. In order to get that skilled person, they'll have to pay a lot of money. They also need a sweet package to keep that individual," says Fafard.

An alternative to paying for someone who has done the job is to find someone with project leadership background in similar technologies who has intelligence, drive and talent — and let him learn the rest.

Advice to candidates: Keep up with trends in Internet technology, especially on the consumer applications side. Make sure the technical projects you've worked on demonstrate a positive impact on a company's competitive edge.

2. Position: Web Architect

Responsibilities: Analyze and design Web architectures for multiple e-commerce projects. Includes development of customer applications, Web servers, transactional systems and links to back-office databases, management of project deliverables, cross-unit communication and training.

Salary: Up to $180,000.

Qualifications:

- High-level e-commerce project management background.
- Experience in Active Server pages, Java and JavaBeans and object-oriented technologies such as Common Object Request Broker Architecture (CORBA), Component Object Model/Distributed Component Object Model (COM/DCOM).
- Background in Windows, Unix, SQL, Oracle, C++, Visual Basic, VBScript, Perl.

Advice to hiring managers: "Be patient. These people are rare and valuable. And expect to open your wallets," says Peter O'Keefe, a staffing specialist at Romac Information Technology in Tampa, Fla.

Advice to candidates: Don't rest on your laurels because technology trends change quickly. "One example is ERP [enterprise resource planning], which was 30% of our business last year. Now all of our business is e-commerce," says O'Keefe.

3. Position: Senior Software Architect for E-Commerce Start-up

Description: Design and build complex electronic business systems for e-commerce start-ups.
Salary range: Varies, but up to 20% lower than architects for non-start-ups because pay also includes stock equity.
Qualifications:
• Strong understanding of design patterns and object-oriented design, understanding of distributed object paradigm.
• Must master Java, especially Java 1.2, with experience in CORBA, DCOM and Enterprise JavaBeans.
Advice to hiring managers: Plan on a single shot at the candidate. Conduct all interviews in one day. Don't hesitate to make an offer. "The companies getting the best people move faster than their competition," says Ben Sabrin, Atlanta area technical recruiter at the job placement firm Pencom Systems Inc. in New York.
Advice to candidates: Consider this an investment — and a gamble. Do your homework. "If you are going to work for a start-up, make sure you believe the company can be successful," says Sabrin.

4. Position: E-Business Strategist

Description: Provide strategic e-commerce marketing planning, including competitive analysis, electronic business planning, systems planning and organizational structuring to support and enhance the company's overall marketing efforts.
Salary range: $100,000 to $175,000, depending on level of experience and exposure to vertical industries.
Qualifications:
• There are two paths to this lower-tech career. Technical professionals need project management skills in building commercial-quality Web sites. They need strong business backgrounds including market analysis, competitive analysis, project leadership and written and oral skills on par with the CEOs, CIOs and marketing directors they'll be working with.
• Nontechnical managers moving into this position must have expert knowledge in a particular industry (automotive, finance or health care, for example). Such business experience could lead to training on the Internet side.
Advice to hiring managers: "If you can't find someone with this type of practical experience, hire a great project manager who has built Internet sites before. Or someone who has background in Internet software development cycles," says Cliff Kahan, director of Pencom's New York office.
Advice to candidates: Internet consulting firms, management consulting firms and large corporations with existing Web sites are all looking for these skills to take them to a new competitive and profit-earning level.

"Companies are looking for ways to make their Web applications effective," Kahan adds.

5. Position: Internet Security Manager

Responsibilities: Building and assessing secure electronic businesses. Defining, designing, implementing e-commerce security tools and architectures. Policy creation, testing and assessment of enterprise security controls, processes and application or network designs.
Salary: $85,000 to $150,000.
Qualifications:
• Experience in implementation of Internet, extranet and intranet systems; knowledge of firewalls, routers, Web servers and system management software.
• Technical expertise in encryption, intrusion detection, firewalls, digital signatures, challenge response authentication, virtual private networks, public-key infrastructure and integration of older systems.
• The ability to perform effectively in distributed environments, including PCs, networks, Unix, Linux and Windows NT. Ability to integrate across different applications like ERP and supply chain systems.
Advice to hiring managers: Realize that every candidate won't possess every single skill you want.

Be open to both formal and on-the-job training, says Tracy Lenzner, president of Lenzner and Associates, a Las Vegas placement firm that specializes in Internet security.
Advice to candidates: "Get your bachelor's [degree]. A lot of these creative guys don't get a degree — and in the long run, that will stymie you. Hiring managers will always ask, 'Why don't you have a degree?' " says Lenzner. And stay hands-on and cutting-edge by watching for trends in new technologies.

6. Position: Java Software Developer

Description: Developing e-commerce applications and extranet Web-based client/server business applications using Java in a mixed Unix/NT environment.
Salary range: $60,000 to $80,000.
Qualifications:
• Two to three years' Java development experience (both server and client side); experience in distributed technologies like CORBA, Remote Method Invocation and Enterprise JavaBeans.
• It's also helpful to have experience in the following: JavaBeans, servlets and Web server technologies like Apache, Internet Information Server, Abstract Windows Tool Kit, HTML, Dynamic HTML, Unified Modeling Language and the Booch design methodology.
• Good communication skills and a college degree in a computer field.
Advice to candidates: "Provide detailed descriptions of your project experience on your résumé," says Sacha Theime at Pencom's Chicago office.

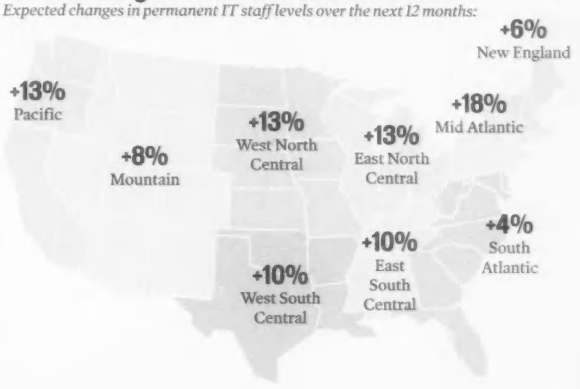
7. Position: Web Application Developer

Responsibilities: Build cutting-edge, project-specific Web-based applications.
Salary: $60,000 to $100,000.
Qualifications:
• Java, C++, Visual C++, scripting languages like Perl and JavaScript.
• Software engineers with Web architecture experience will earn the most in this position.
Advice to candidates: If you're a junior candidate interested in growth, you should seek hands-on work to build your skills, volunteer additional time to work on projects outside your current responsibilities and join user groups. ◗

Radcliff is a freelance writer in Santa Rosa, Calif.

Where Hiring Is Hot – and Where It's Not

Expected changes in permanent IT staff levels over the next 12 months:



Staffers Wanted; Contractors Aren't

Hiring managers have again revealed healthy hiring plans for full-time staff positions and large-scale declines in the need for contractors for the coming year.

INDUSTRY	NUMBER OF COMPANIES SURVEYED	AVERAGE NUMBER OF EMPLOYEES	12-MONTH STAFF HIRING PROJECTION	12-MONTH CONTRACTOR HIRING PROJECTION
Manufacturing (noncomputer)	284	30	+14%	+2%
Financial/insurance/real estate	173	74	+14%	NA
Computer sales/peripherals	36	45	+14%	NA
Health care/medical services	92	170	+13%	-8%
IT consulting	28	67	+11%	NA
Education	207	22	+10%	+13%
Retail/wholesale	99	26	+10%	-35%
Communications/transportation	86	117	+9%	-14%
Mining/construction	56	15	+8%	-15%
Business services (non-IT)	83	32	+5%	-42%
Government-federal/military	50	59	+4%	-4%
Government-state/local	83	31	+3%	+16%
Manufacturing (computer)	43	97	+3%	-10%
TOTALS	**1,320**	**NA**	**+10%**	**-22%**

Employee Stock Options

BY TOM DUFFY

THERE WAS A TIME when only a handful of companies granted employees stock options. But today, most firms are using that enticement to either lure talent from the competition or keep talented workers from jumping ship.

"It used to be a strategic advantage, in terms of recruitment and retention, for a company to give stock options," says Ron Bernstein, author of *The Entrepreneur's Guide to Equity Compensation*. "Now it's a disadvantage for the company if they don't have it, because everyone else is offering it. You rarely see a high-tech company that doesn't have a stock-option program these days."

Companies have always used stock options as an incentive for employees to be more productive by giving them an ownership interest in their companies. The theory is that employees will work harder if they know their efforts might impact the bottom line — and boost the value of their stock.

Stock options are particularly popular at start-up technology firms, which are often short on cash for salaries but long on potential for future growth. The payoff for options holders in start-ups that aren't yet public typically comes only if the company goes public and the options are converted into actual stock.

"Those companies don't have a lot of cash, because most of it is going into financing growth," says Patrick Gregory, a professor of finance at Bentley College in Waltham, Mass. "The stock options are a way of getting people to buy in."

Sharing the Wealth

That's exactly what Priceline.com Inc., a 2-year-old Internet purveyor of airline tickets, home mortgages and other products and services, was thinking when the company was launched.

Priceline.com grants options to every employee — from the mail room to the boardroom — when they're hired, with the number of options varying, depending on their position, according to company spokesman Brian Ek.

Although Priceline.com employees won't discuss the price they paid for their options, it's fair to say that many paid far below the current market value of approximately $63 per share.

"The feeling was that we wanted everyone to be a part of the success, and we wanted everyone to have the same incentive," says Ek.

When an employee joins a company, he is typically granted an option to buy a specified amount of stock at a certain price. The timing of when he is allowed to exercise that option, or buy the stock, varies from one company to the next.

The average amount of time before employees can exercise their options on the full amount of stock in the high-tech sector is four years, according to San Francisco-based Westward Pay Strategies Inc., which tracks corporate compensation practices.

Unequal Opportunities

Still, not all options are created equal. There are two basic kinds, and there are some critical differences between them, primarily in the way they're taxed.

The first type of option is known as nonqualified. Its distinguishing feature, at least from the employee's perspective, is that it is taxed as regular income when granted and doesn't qualify for any special tax advantages for either the company or the employee. That means the tax comes due on the options possibly long before any benefit is realized from selling them.

The second type of option — incentive stock options — is more common among high-tech start-ups. They're typically taxed as capital gains, meaning that any tax on the gain isn't due until the employee sells his shares.

For senior executives in upper-income brackets, that also means the tax rate could be lower than it would be if the options were taxed as regular income, according to Gregory.

"If you have the choice between incentive and nonqualified, you might want to do the homework on whether you would want, say, 100 incentive options vs. 150 nonqualified," Gregory says.

Who Can Negotiate

For workers at the lower end of the hierarchy, there is often little room to negotiate the type or amount of options they receive.

But senior managers and other high-level employees can often negotiate some of the details of their options, according to Charles Leadford, a director of Primus Associates LC, an Austin, Texas, high-tech executive search firm.

"There are companies that will say, 'We don't offer stock options,' " says Leadford. "But if there is a sought-after candidate, and he says stock options are a condition of his employment with the company, you will find that everything is negotiable."

Of course, options are valuable only if the share price rises. "If you don't believe in the management team and you don't think they're going to make it to their goal, you won't get the profits," says Bernstein. "You really have to do your homework on the company."

Duffy is a freelance writer in Northampton, Mass. Contact him at tduffy62@compuserve.com.

DEFINITION

Employee stock options present an opportunity for employees to buy a portion of the stock of the company for which they work. Companies that offer this benefit typically allow employees to lock in their purchase price for the stock either at or below the market price at the time the options are granted.

Two kinds of stock options:

1 NON-QUALIFIED
Taxed as regular income when granted, nonqualified options don't qualify for any special tax advantages.

2 INCENTIVE
Typically taxed as capital gains, incentive option tax payments are due when the employee sells the shares.

Q&A

How can employee stock options help a company grow? We posed the question to Ron Rose, CIO at Priceline.com.

Why offer stock options to your employees?
Options are provided in order to [give employees an incentive to] understand the shareholder's proposition. When technology employees are involved in understanding the underlying dynamics of shareholder value, they get involved in learning how to deliver products more cost-effectively, the importance of time-to-market and a bunch of different things. The better you understand the business end, the better you are as a technologist.

What evidence have you seen that stock options inspire people to be more productive and work more efficiently?
When you are growing a company at this speed, it's hard to keep your costs under control. We've had great success at that, and sometimes I think there is a certain awareness on the part of programmers that there is no such thing as an unlimited technology budget. They are very active in trying to reduce costs, because they understand that every reduction translates into an increase in earnings that will help power the stock.

How important are options in terms of attracting talented technology workers?
One of my favorite sayings is "People are happiest when they have a worthy quest." Technologists are far more motivated by the nature of the mission. Options enter in as an element of the decision-making process, but they aren't the focal point.

What role did Priceline.com's options program play in your decision to join the company six months ago?
I came here because I wanted to help redefine the e-commerce marketplace. The fact that it was an Internet company that had an options program was an additional factor. But my main motivation was one of focus and challenge.

MOREONLINE

For more information and links on employee stock options, visit our Web site.
www.computerworld.com/more

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IBM

Dear Career Adviser:

I have more than 14 years' experience in information technology, mostly in IBM AS/400 environments. I had cancer and had to leave my job as an IT director in May 1996. I'm cured, and I returned to work a year ago as a consultant, which was the only work I could find then.

I want to resume a management role. When I interview, employers tell me that because of my two-year absence, my management skills might have become rusty. I would like to leave this programmer-level consultant mold, get trained and work in SAP or PeopleSoft, but I cannot afford full-time or expensive training programs. — WHAT NOW?

Dear What:

Applause for getting well! You correctly assessed that revealing a disability or prior illness history can spark many employers' concerns, though the Americans With Disabilities Act considers such behavior discriminatory and *illegal* and punishes it when discovered. "If a candidate creates questions in the employer's mind that awaken issues, real or imagined, of potentially losing time for illness or increasing the employer's costs, be they to accommodate a disability or pay higher health insurance premiums, you might not get the job without knowing the real reason why," says Hank London, a placement specialist at San Francisco Vocational Services.

So what should you do to find new work? "Always present yourself as the best-qualified candidate to fill an employer's needs and emphasize your skills, qualifications and experience to satisfy the employer's goals," counsels London. Continually seek out opportunities that will "bridge" your way into the job you want, saving your medical history until after you have the job offer in hand.

Emphasize to the companies you're working with that you're open to full-time work. Take courses on the side, and attend conferences and user group meetings. Get involved in managing, even if you do it by getting involved with a university's entrepreneurship program.

Dear Career Adviser:

Recently you advised, "The best way to be sure you're always working is to get some experience with a popular, well-entrenched business package and application under your belt, whether PeopleSoft-, SAP- or Oracle-based — in other words, something really desirable in the marketplace."

However, my own company seems to prefer hiring external consultants for these jobs rather than internal staff. So with 20 years of IT experience, should I spend thousands of my own dollars on training in these applications, and if I do, how will I get the one to two years of actual experience most employers demand? — IN A QUANDARY

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

Dear Quandary:

First, start reading *Becoming an SAP Consultant*, by Gareth de Bruyn and Ken Kroes, advises Frank Scarpelli, an enterprise resource planning recruitment specialist in Chicago. "It's chock-full of good tips." Check into receiving training directly from SAP, perhaps by having an SAP client sponsor you. Then look for areas that transfer more easily than others to get yourself in the door, such as Basis administration. For those with a networking and infrastructure background, says Scarpelli, the leap is not so big and the demand for this skill is high.

Last, join SAP user groups. Check out *www.asug.com*, *www.realtime-usa.com/sapgroup* or *listserv@mitvma.mit.edu* and *www.sapfaq.com*. If you can't join a project that is directly related to SAP or PeopleSoft, become part of a project that feeds into one of them and chum it up with those SAP and PeopleSoft folks. You may spend $5,000 or more of your own money, but is there a better long-term investment than yourself?

Dear Career Adviser:

I started work with my current employer, a software company, three years ago as a software engineer. I was promoted first to technical lead and am now a development manager, spending approximately 75% of my time in development and 25% managing. I am ready to look for a different employer, and I like the developer and manager mix I have now. In my job search, what title should I go for: project manager, development manager or senior developer or technical lead? How do I tell potential employers I don't just want a purely managerial position? — DANNY'S DILEMMA

Dear Danny:

As you search for a new job, "go after lead developer or architect titles and roles, since 'project manager' may mean you're just maintaining someone else's schedule," says Nick Bonfiglio, vice president and general manager at Portera Systems Inc., a Mountain View, Calif.-based consulting firm. And in your interviews, follow Bonfiglo's advice: "Start your answers focused on the business. It shows you can think big."

Follow up with precise technical details, showing that you're solid technically. For example, if asked, "How would you architect an e-commerce solution?" start by discussing e-commerce business. Then add your detailed experience with Java or with billing and profiling systems used to track customers as well as your ideas for that particular company's implementation vis-à-vis other products in the market. This shows that you know the kinds of problems e-commerce firms face in their core business, plus the various technical systems and trade-offs that have an impact. ◗

BRIEFS

UK Banks OK on Y2K

The U.K.'s Financial Services Authority will reveal at its National Infrastructure meeting this month that all the major financial institutions in the country are prepared for computer issues that may arise due to the date change to 2000. The government agency is expected to announce that 140 institutions whose failure would cause widespread problems had qualified to exit the "red zone" high-danger classification. Although the system relies largely on institutions submitting their own information, the agency validates its reports with its own information, according to a Financial Services Authority spokesperson.

E-Chem Trading

Industry to Industry Inc. in Boston last week launched a business-to-business electronic marketplace called Chemicals Exchange (*www.i2ichemicals.com*), where companies in the chemicals and plastics industries can buy, sell and trade their wares. Members can integrate their Internet-based trading with SAP AG's enterprise resource planning packages for inventory management and accounting.

CRM Market to Grow

AMR Research Inc. in Boston last week released a report predicting that the worldwide market for customer relationship management (CRM) software will grow 61% to $3.7 billion this year. That's up from $2.3 billion last year, AMR said.

By 2003, it added, the CRM market could reach $16.8 billion, as more users do business online and build new "contact centers" to handle dealings with their customers.

Swedish Air Control

Sabre, an affiliate of Sabre Inc. in Fort Worth, Texas, announced that it completed the installation and integration of flight scheduling products for Scandinavian Airlines System in Stockholm. The contract was worth more than $3 million.

HP Quick Sites

Hewlett-Packard Co. said it will build e-commerce sites for retail and manufacturing companies within 100 days and provide ongoing support through a new offering called Enterprise Commerce. The service is offered through HP's new E-services Support Center, which is staffed by experts in e-commerce infrastructure and applications. HP will use Web applications from BroadVision Inc. in Redwood City, Calif., and ClearCommerce Corp. in Austin, Texas, as part of its product set.

New Kmart CIO

Kmart Corp. in Troy, Mich., named Joseph Osbourn senior vice president and CIO, replacing Donald Norman, who left last spring to become CIO at U.K. retail giant Harrod's Ltd. in London. Osbourn was previously vice president for information services at Walt Disney World in Orlando.

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TECHNOLOGY

EASING THE LOAD

SAP R/3 customers can save thousands of dollars each year using new Web-based tools that allow users to perform management and maintenance work themselves instead of tying up the IT staff with it. Such tools are available now from BindView Development in Houston and are coming soon from SAP itself. ▸ 65

FRUITS OF PAIRING

Sybase/Wind River show off wares from their partnership at a conference. ▸ 65

OPINION

Timing is everything: Handspring's Visor is more than a lower-cost alternative to the PalmPilot. It could help Palm-based handhelds become a corporate standard, like the IBM-compatible PC, writes Technology Editor Bob Scheier. ▸ 66

BE SELECTIVE

Tivoli Systems aims to make it easier to back up data on remote computers with Storage Manager 3.7. Its big advantage: the ability to replicate only selected files. ▸ 66

BULKING UP

Historically, changes in stock pricing formats have caused huge surges in trading volume and the number of price quotes flowing over networks. The Boston Stock Exchange is getting ready for the move from fractions to decimals with a major upgrade of its network infrastructure and Stratus servers. ▸ 69

STICKER SHOCK

Access to leased lines is crucial to opening competition in telecommunications and Web access. The European Commission will investigate whether former European telecom monopolies set restrictive prices or conditions on such access. ▸ 68

EAI? ME ,TOO!

Enterprise application integration: Everybody says they're doing it, and everybody wants it. But don't hold your breath waiting for an off-the-shelf solution. ▸ 74

WORM SQUIRMER

If someone released a worm today that brought down 10% to 20% of the computers connected to the Internet, as the Morris worm did in 1988, it could potentially cause a global, social and financial crisis, according to security experts. ▸ 78

HOT JOBS, COLD CLIMATE

The upstate New York cities of Rochester, Syracuse, Albany and Buffalo are blanketed with IT opportunities in diverse industries and high-tech markets. ▸ 80

MORE

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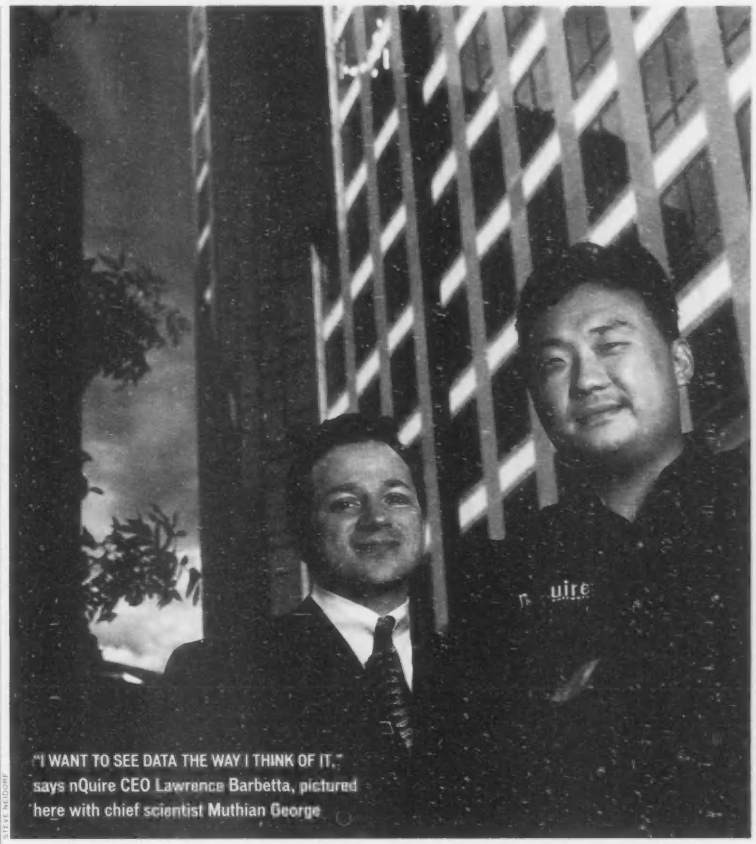

"I WANT TO SEE DATA THE WAY I THINK OF IT," says nQuire CEO Lawrence Barbetta, pictured here with chief scientist Muthian George

PETE SOUSA

WEB-LIKE HELPER FOR DATA ACCESS

DECISION-SUPPORT TOOLS typically require masses of data and powerful tools to bring incompatible data types together and then try to make sense of the combined data. Start-up nQuire Software Inc. promises to do exactly that for very large enterprises by providing users with Web-style decision analysis. 70

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Homegrown SAP Tool Lets Users Do the Work

By letting end users make changes to the R/3 database, a new BindView product frees IT staff for other tasks, saves money

BY SAMI LAIS

A NEW, Web-based tool has been developed to help SAP R/3 customers save many thousands of dollars each year by automating tasks and shifting work from their information technology staff to business users.

Houston-based BindView Development Corp. this month released the first two modules of its new tool, bv-Control for SAP. Similar capabilities are planned for an upcoming version of SAP R/3, said an SAP AG spokesman.

BindView acquired the basic SAP tool from Houston-based oil producer Amerada Hess Corp., further developed it and integrated it into its flagship bv-Control enterprise management software.

During initial implementations of SAP R/3, customers use bv-Control to define, in business English, SAP transactions such as creating purchase orders.

The software's Client Management module lets business staff change user profiles, for example, allowing a co-worker to create purchase orders when the person who would normally do that work is out of the office.

It also can automate what in SAP R/3 are called transports, or changes, to the R/3 database and automatically do routine checks, such as ensuring that adequate disk space is available to perform a transaction.

Savings Benefit

It was partly by moving such tasks to nontechnical business personnel that Hess was able to save $270 million over two years using the tool, said Robert Johnson, product manager and chief architect at BindView and former chief architect at Hess. Further savings came from centralizing security management, freeing IT staff for other tasks, he said.

Tazmina Mukhi, a consultant at Houston-based database consultancy Zubair Inc., was an SAP auditor for Hess and a beta user of bv-Control for SAP R/3. Using what is now the Audit module, "we could create and test security before implementation and ensure that controls were in place," she said.

For example, she might display security profiles and find that someone had erroneously been given the capability to initiate a request for bids.

Look at Security Profiles

Using bv-Control, "you can look at security profiles and click and say, 'Who are the users that have this capability?' and it shows you," said Mario Say, SAP systems manager at Browning-Ferris Industries Inc., a waste treatment, removal and recycling company in Houston. Getting the same information in SAP entails going to several tables, he said.

But the tool's main advantage, he said, is that "it's really intuitive to use." Much of what bv-Control does can be done in SAP, but with difficulty, he said. "With bv-Control, if you can use a Web browser and Excel, you're pretty much there."

The current beta version of SAP has features similar to those of the BindView product, an SAP spokesman said, explaining that SAP was "addressing the same issues" as Hess while Hess was developing its tool. The BindView tool, like other customer-developed tools, could be useful to those with older SAP installations or to those who are waiting to upgrade to the current version, said the SAP spokesman.

The Audit and Client Management modules are available now (see chart), with pricing beginning at $30,995. The Business Views and ID Management modules, which essentially are upgrades of the first two, will be available in the first quarter of next year.

bv-Control for SAP Modules

MODULE (AVAILABILITY)	WHAT IT DOES
Audit (Available now)	Via a Web browser, analyzes relationships between SAP users and transactions for potential risks
Client Management (Available now)	Automates checking of SAP transactions; analyzes SAP user license usage
Business Views (First quarter next year)	Extends SAP change capabilities to business users
ID Management (First quarter next year)	Automates addition of new SAP users; builds on Audit module risk management for business users

Sybase Debuts Embedded Data Management Beta

New products result from partnership with Wind River

BY LAURA ROHDE
LONDON

Sybase Inc. last week said it would be showing developers a beta version of its new integrated embedded data management products at the Embedded Systems Conference in Emeryville, Calif.

The products are a result of Sybase's partnership with Alameda, Calif.-based Wind River Systems Inc., which was announced in February. Wind River and Emeryville-based Sybase have been working to improve links between embedded database devices — such as Internet appliances, industrial controllers, office equipment, set-top boxes and consumer appliances — and central data repositories.

At the conference, developers were able to evaluate the first fruits of this partnership. The companies have integrated Sybase's SQL Anywhere — a database for laptops, handhelds, smart phones and intelligent appliances — as well as Sybase's Ultralite deployment technology, into Wind River's Tornado application development software and its VxWorks real-time operating system [News, Feb. 12].

E-Commerce on the Go

The new platform is part of what Sybase is calling its e-Anywhere strategy, designed to help users build and deploy e-commerce applications for mobile devices. The company is focusing on synchronizing and distributing data, locally storing data for mobile devices and customizing applications.

Sybase's new version of SQL Anywhere Studio is due in the fourth quarter.

Rohde writes for the IDG News Service in London.

BRIEFS

E-Commerce Sites From HP in 100 Days

Hewlett-Packard Co. said it will build e-commerce sites for retail and manufacturing companies within 100 days and provide ongoing support through a new offering called Enterprise Commerce. The service is offered through HP's new E-services Support Center. HP will use Web applications from BroadVision Inc. and ClearCommerce Corp. in building the sites.

Novera Upgrades Web Integration Tool

Novera Software Inc. in Burlington, Mass., has announced an upgrade of its flagship product, which helps customers integrate information in existing mainframes, databases and packaged applications with Web applications. Novera 4.6 adds support for IBM's MQSeries messaging-oriented middleware and DB2 database, Oracle Corp.'s Oracle8i database and Allaire Corp.'s ColdFusion development tool. Pricing begins at $30,000.

LapLink Offers Secure Personal Net Links

Bothell, Wash.-based LapLink.com Inc. has announced LapLink 2000, which allows users to securely expose files in a folder or the contents of their entire disk drive to another user over a secure Internet link. Priced at $169, LapLink 2000 includes support for dual-level encryption, lock-out protection against hackers, case-sensitive passwords and folder-level security. It also supports simultaneous data and voice connections over IP.

Linux Partnership

Corel Corp. and Inprise Corp. will collaborate on development of Linux products, which will include Corel's office applications and Inprise's application development tools, the companies have announced. Inprise is developing a Linux rapid application development tool, code-named Kylix, to create new applications for Linux and port existing ones to the operating system, said Dale Fuller, Inprise's president and CEO.

ROBERT L. SCHEIER/COMMENTARY

Timing is everything

LIKE IT OR NOT, you've now got, not one, but two handheld standards to support. One is Windows CE, simply because Microsoft has the clout to keep its handheld operating system alive while it fixes Windows CE's many flaws.

The other is the Palm hardware and software platform. Note that I didn't say the PalmPilot, soon to be spun off as a separate business from 3Com. Nor did I say Handspring's Visor, a recently released and less-expensive version of the PalmPilot.

Rather, it is the combination of these two Palm-based products, along with all the applications and peripherals developed for them, that could be as important for corporate IT to support as IBM-compatible PC clones.

Consider what Palm has created with the Palm operating system: a licensable operating system that because of the cost-effectiveness of the hardware on which it runs, attracts hordes of developers writing inventive applications. Sounds like Microsoft in the early '80s, doesn't it?

Handspring, for its part, has created a hardware platform with an open expansion slot, called the Springboard, for which hardware vendors can create all types of peripherals. Sounds like ISA slots in all those IBM clone motherboards from Taiwan, doesn't it?

Based only on the original hardware platform, the PalmPilot has grown to an installed base of more than 4 million units, which ensures a healthy community of developers who have already written more than 15,000 applications for it. Now with the Handspring Visor, we have the beginning of a clone industry in Palm hardware. And if someone comes up with a "killer module" that popularizes Visor's expansion slot, that slot could become as universal a standard as the ISA bus on the IBM clones.

ROBERT L. SCHEIER is *Computerworld*'s technology editor. He can be reached at robert_scheier@computerworld.com.

Like it or not, the Palm operating system and (perhaps) Handspring's add-in slot are rapidly becoming corporate standards IT will have to support.

Meanwhile, another pair of would-be standards — Compaq's Alpha microprocessor and Tru64 Unix — faded further into obscurity. With its acquisition of Digital, Compaq had hoped to make Alpha and its 64-bit Unix mass-market standards. Now Compaq has given up and essentially tied the future of the two platforms to each other. Compaq plans to move parts of Tandem's Non-Stop Kernel technology into Tru64 and use the operating system and its Alpha chips only in its own high-end servers.

Gone are plans to run Microsoft's juggernaut Windows NT on Alpha or to run Tru64 on the next generation of 64-bit chips from Intel and Hewlett-Packard.

Why did the Palm succeed where Digital (now Compaq) did not? Because Palm fixed real problems with handhelds more quickly than other vendors and marketed the heck out of its products. Digital created a great chip and a great operating system only after Intel and Microsoft had captured those markets. As a result, IT managers will pigeonhole Alpha and Tru64 into high-end applications, while paying more and more attention to the Palm operating system and its associated hardware. ◗

MOREONLINE

For resources related to handhelds, visit our Web site.
www.computerworld.com/more

Tivoli Tool Eases Remote Backup

Speedier backup may encourage mobile users to take the time to do it

BY SAMI LAIS

With Storage Manager 3.7 released late last month, Tivoli Systems Inc. is trying to help customers protect their most vulnerable data — those on laptop computers.

Regular backup procedures can't reach mobile computers, and users, typically facing long connect times at low speed, are usually less-than punctual about backing up files.

Storage Manager, the upgraded and rebranded Adstar Distributed Storage Manager (ADSM), can cut backup time by half because it targets only files that have changed since the last backup, said Tivoli storage strategist Troy Pladson.

The same process works in reverse to restore only the files that have been changed. Or, through the same graphical user interface, users can select only files they want to restore.

Although the company is initially touting the backup capability for its value to mobile workers, the same process works on servers and across LANs, WANs, storage-area networks (SAN), Internet and dial-up connections.

Storage Manager also offers multithreaded data transfer and tape resource sharing, which lets servers that are attached to a SAN use the same tape library and drives.

Users are inching their way into the world of SANs, said Michael Adams, an analyst at Giga Information Group Inc. in Boston. "Managers may be buying new tape libraries, but they're not signing up for a whole new architecture," he said.

The Hartford Insurance Group Inc. in Hartford, Conn., uses ADSM to do desktop backup to mainframe silos. "I'm always interested in new ways of doing things," said John Siantilli, storage manager for the insurer.

But for now, his priorities are more likely to be in Web servers, he said.

Faster Backup

Vendors such as Legato Systems Inc. and Veritas Corp. are also adding features to their storage management software to speed backup and recovery and enable shared data access of network-attached storage devices.

ConvergeNet, bought early last month by Dell Computer Corp. in Austin, Texas, will this month release the first beta of its Storage Domain Manage, which will concentrate on heterogeneous interoperability of SAN devices and management of the enterprisewide SAN from a single console.

By giving the upgrade to most current ADSM users, Tivoli is creating a sort of test bed for users and letting them prepare for the time — likely a year away — when SAN technology will take off, Adams said.

Storage Manager 3.7 became available last week. Pricing ranges from $920 for a Windows NT server to several thousand dollars, depending on features, options and platforms. The client costs $115 on any hardware from laptop to mainframe. ◗

The Backup Stackup

Tivoli Storage Manager 3.7 adds:

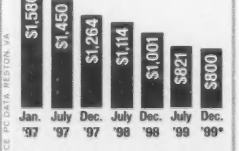
- **ADAPTIVE DIFFERENCING TECHNOLOGY:** Dynamically transfers data at a byte, block, file or volume level
- **DYNAMIC MULTITHREADED TRANSFER:** Lets a user send multiple streams of data simultaneously
- **LANFREE DATA TRANSFER:** Occurs over a dedicated data network or storage-area network, freeing up LAN IP bandwidth
- **TAPE RESOURCE SHARING:** Lets multiple servers use the same tape library and drives
- **NETWORKFREE RAPID RECOVERY:** Supports high-speed client data recovery direct from a tape or CD-ROM

SOURCE: TIVOLI SYSTEMS INC., AUSTIN, TEXAS

SNAPSHOT

Falling Prices

Average price of a PC with Windows installed and an Intel processor (not including monitor)



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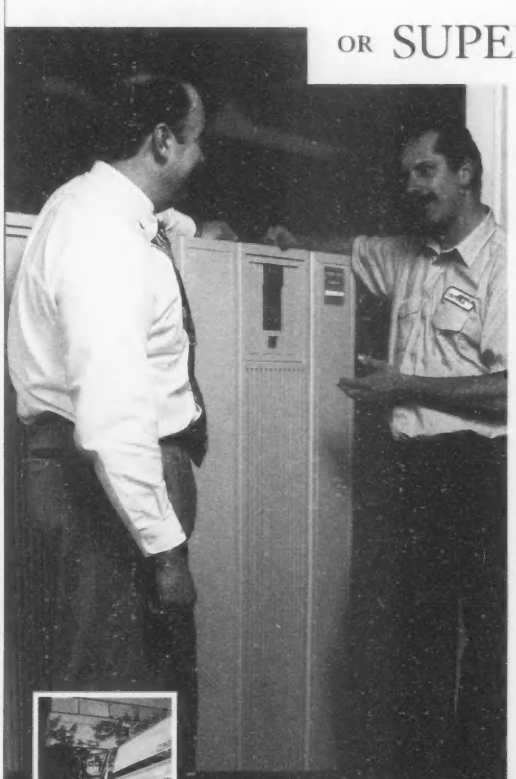

Liebert Representative Jeff Price of CDP, Inc. (left), and Jim Vivian of Johnson Controls worked together to configure a protection system for Johnson Controls' IT network. Because of the network's size, they specified a Liebert UPStation® S3, an on-line, three-phase UPS for handling larger systems.

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EC to Probe Costs of Leased Telecom Lines

Investigation will ask if former monopolies set restrictive prices, conditions

BY ELIZABETH DE BONY
BRUSSELS

THE EUROPEAN Commission will shortly launch an investigation into the provision of leased lines by telecommunications carriers.

Within the next few weeks, the commission will send out questionnaires to telecommunications companies across the 15 member states of the European Union (EU), requesting information about the prices and conditions they pay or impose for leased lines, a commission spokesman confirmed last week.

The commission's investigation was prompted by concerns that the high cost of leased lines is undermining Internet development and making it difficult for companies to enter the EU telecommunications market.

Leased lines are critical to the expansion of Internet services because most new entrants and service providers lease from former telecommunications monopolies rather than build their own networks. By keeping the price of leased lines high, the incumbent carriers are able to keep out competitors.

"The aim [of this investigation] is to bring prices down," said Peter Guilford, the interim spokesman for Competition Commissioner Mario Monti. The investigation will also look at roaming costs in mobile telephony, he added.

Best Practices

Once the commission has the responses to the questionnaire, it will compare them and identify the best practices among the member states. A commission official who asked not to be identified told International Data Group that these practices will provide the basis for a nonbinding commission recommendation that should surface later this year.

Although commission recommendations are legally nonbinding, they reveal what the European Commission views as acceptable behavior in this field, and telecommunications operators who fail to respect the guidelines risk an antitrust investigation.

The commission successfully used this approach when dealing with interconnection fees incumbent carriers were charging competitors. After a similar investigation, in October 1997 the commission issued a recommendation identifying as the "best practice" the lowest interconnection costs it had found.

The following year, the commission opened 35 infringement proceedings against various telecom incumbents that had ignored the best-practice guidelines. By mid-1999, the commission had closed most of those investigations because the companies had aligned their prices with best practice, a commission spokesman said earlier this year.

> The aim [of this investigation] is to bring prices down.
>
> PETER GUILFORD, SPOKESMAN, EUROPEAN COMMISSION

De Bony writes for the IDG News Service in Brussels.

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Boston Stock Exchange Bulks Up to Handle Decimal Prices

Upgrades servers, networks to prepare for possible increase in traffic, trades

BY JAIKUMAR VIJAYAN

A proposed move to price all stocks in decimals instead of fractions within the next 10 months has contributed to a substantial hardware and network upgrade at the Boston Stock Exchange Inc. (BSE).

The Boston-based exchange, which handles trades for 2,000 nationally listed equities, is completing an overhaul of the three systems that run its tickers, handle communications between traders and the trading floor and host its main trading application.

When complete in 60 days, the exchange will have moved these core applications from previous-generation fault-tolerant servers from Marlboro, Mass.-based Stratus Computer Inc. to newer, faster and bigger servers from the same vendor. Meanwhile, Cisco Systems Inc. routers and switches will provide a network infrastructure capable of delivering up to 100M bit/sec. Ethernet connectivity to traders' desktops if needed, compared with the current 3M bit/sec., which is all that is required now. The expected result: a near threefold boost in overall processing capacity.

The upgrade comes largely in anticipation of a proposed move by the Securities and Exchange Commission to price stocks in decimals rather than in fractions.

BSE's JAMES B. CROFWELL: Decimals mean more traffic

Slated to be phased in by next fall, decimalization is expected to result in a sharp increase in the number of stock quotes and the messaging traffic brokerages handle. That's because with decimals, there are more possible stock prices and thus more individual price quotes [News, Sept. 27].

"Most exchanges are not going to wait around to find out if they are going to need hardware upgrades" to handle the increased volume, said Richard Fichera, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Also driving the hardware upgrades at the BSE are a general increase in trading volumes — from 2.6 million-shares in 1998 to more than 10 million today — and a move toward Internet trading.

The upgrades will also be vital in handling the near doubling of daily trading volume the BSE expects as a result of this shift, said James B. Crofwell, president and chief operating officer at the BSE. When the markets started listing stocks in 16ths instead of 8ths about three years ago, there was a similar spike in trading volumes, according to Crofwell. "People simply find it cheaper to trade in narrower price increments," he said.

"Decimalization could result in a four- or fivefold increase in traffic" in some markets, Crofwell said. The BSE currently handles 21,640 trades and 10.6 million daily share transactions.

Providing the headroom for the decimal shift are recent models of Stratus Continuum Unix servers, featuring faster processors, more memory and faster network connectivity than previous models. A new dual-processor Stratus Continuum 625 fault-tolerant server based on Hewlett-Packard Co. 96-MHz PA-RISC 7100 processors with an on-chip 2M-byte cache powers the BSE's ticker application. Hosting the trading floor applications are the bigger Continuum Model 1225 servers, while a midrange Model 628 handles the BSE's main trading application. ◗

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Inquiring Minds Need Data to Decide

Start-up nQuire adds a new Web dimension to decision analysis, support

BY RUSSELL KAY

NOTHING grows faster than corporate data. Knowledge workers and executives already use a full arsenal of decision-making tools to make sense of today's information onslaughts — business intelligence systems, online analytic processing (OLAP), report writing and querying products and data mining software. But too often these tools were designed for specialists. And when they face large volumes of distributed data, they tend to screech to a halt or become very inefficient.

Larry Barbetta, once a senior vice president of business intelligence at Platinum Technology Inc. and chairman of the OLAP Council, says he recognized the problem. "We saw the Internet had created a new set of capabilities for the average person. In fact, the average Web surfer has better access to distributed, unstructured data than the corporate executive does to the structured, stored data his organization owns and manages. And we saw that corporate data is changing, becoming very distributed and complicated," says Barbetta.

In 1997, he founded nQuire Software Inc. and began recruiting a team of engineers and architects who had created many of the best data-manipulation applications. Their mission: "To create a fundamental set of technologies analogous to the search engines that get you unstructured info on the Web, a way to make access to all that data transparent to the end user." The result, released in August, was nQuire Server Suite, a group of tools that can get at the different types of data needed to make decisions, whether that data lives in data warehouses, data marts, operational systems or via Extensible Markup Language.

The following three elements differentiate nQuire from other data analysis tools:

- nQuire handles very large amounts of data efficiently.
- It manipulates multiple types of data on dispersed, distributed systems.
- It makes data available in an easy, Web-like, intuitive and interactive format.

Royal Bank of Canada, an early nQuire customer, was trying to get specific information from what Mohammad Rifaie, the bank's manager of information management projects, calls a "hodgepodge" of relational database management systems and execution platforms. Rifaie summarized his monthlong battles to nQuire and says that in two weeks, the company presented him with a "proof of benefit," a prototyped solution that worked much more efficiently than he had expected. "Our challenge is in finding and implementing a solution that lets us integrate data that transcends the boundaries of the enterprise data warehouse and the data marts," he says. "With our massive amounts of data, it's important to have a high-performance solution and eliminate data duplication."

One measure of a new tool's uniqueness is how people use it in unexpected ways. For example, the Web-based fantasy football company Fanball Inc. has to access player statistics from many sources and update them each week. Fanball president and CEO Rob Phythian initially used nQuire to acquire and manage the data he needed. Then he realized he could use it to expose the data to his customers in a new way, letting them make their own queries.

"The nQuire products will power an entirely new, value-added service for our customers . . . that will further distinguish us from all other fantasy sports sites," he says. Phythian is about to launch a new offering that he hadn't imagined before using the nQuire package.

If nQuire succeeds, part of the reason will be that it complements existing tools. Says Barbetta: "We recognize that our customers have considerable investments, they've built complex data warehouses, bought reporting and OLAP tools, built certain applications for decision-making." And some of these were built with the Internet in mind, while others were pure client/server. "We knew we needed to play with both kinds of apps," says Barbetta, "and we made them interoperable with [nQuire Server]."

A second reason is that nQuire offers users self-service tools. "I don't want to sift through 2,000 tables in a data warehouse; I want to see data the way I think of it," he says.

STEVE MCCURRY

"I WANT TO SEE DATA the way I think of it," says nQuire CEO Larry Barbetta (left), pictured here with chief scientist Muthian George

nQuire Software Inc.

Locations:
- 2955 Campus Drive, Suite 300 San Mateo, Calif. 94403
- 601 Carlson Parkway, Suite 1100 Minnetonka, Minn. 55305

Telephone: (612) 745-3000

Web: *www.nQuire.com*

Niche: Web-based enterprise decision-making software

Why it's worth watching:
- First search engine optimized for interactive access and analysis of large volumes of structured data.
- Sales force uses a "proof of benefit" approach so customers will know if nQuire is the right product for them.
- Technical staff and management has impressive track record.

Company officers:
- Larry Barbetta, president and CEO
- Edward Suen, vice president and chief technology officer
- Muthian George, vice president and chief scientist

Employees: 50

Milestones:
- 1997: Founded
- 1999: Receives venture funding
- 1999: Announces nQuire Server

Burn money: $6.5 million from RWI Group, Donald L. Lucas, Sand Hill Financial Group, St. Paul Venture Capital, Telos Venture Partners, Doll Capital Management, Wilson Sonsini Goodrich and Rosati

Customers: Fanball Inc. (*www.fanball.com*); Royal Bank of Canada (*www.royalbank.com*)

Product: nQuire Server Suite

Price: Starts at $125,000

Red flags for IT:
- It's an expensive product, which limits its market right from the start.
- Current version runs on Windows NT only; Unix versions are planned but not yet available.

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What Competitors?

Like most Internet-related start-ups, nQuire considers itself unique. Still, it runs up against many established firms. CEO Larry Barbetta says the nQuire Server Suite can best be compared to traditional decision-support products. "We're not always the best tool for a given purpose," he acknowledges. "For budgeting, planning at department level, with modest data volumes and power users, then absolutely what you should do is deploy an OLAP server like [Hyperion Solutions Corp.'s] Essbase. For interactive analysis, OLAP shines. However, if you need to take an enterprisewide view across masses of data, then nQuire is the better choice."

NQuire has to compete against products in three areas:

Business Intelligence

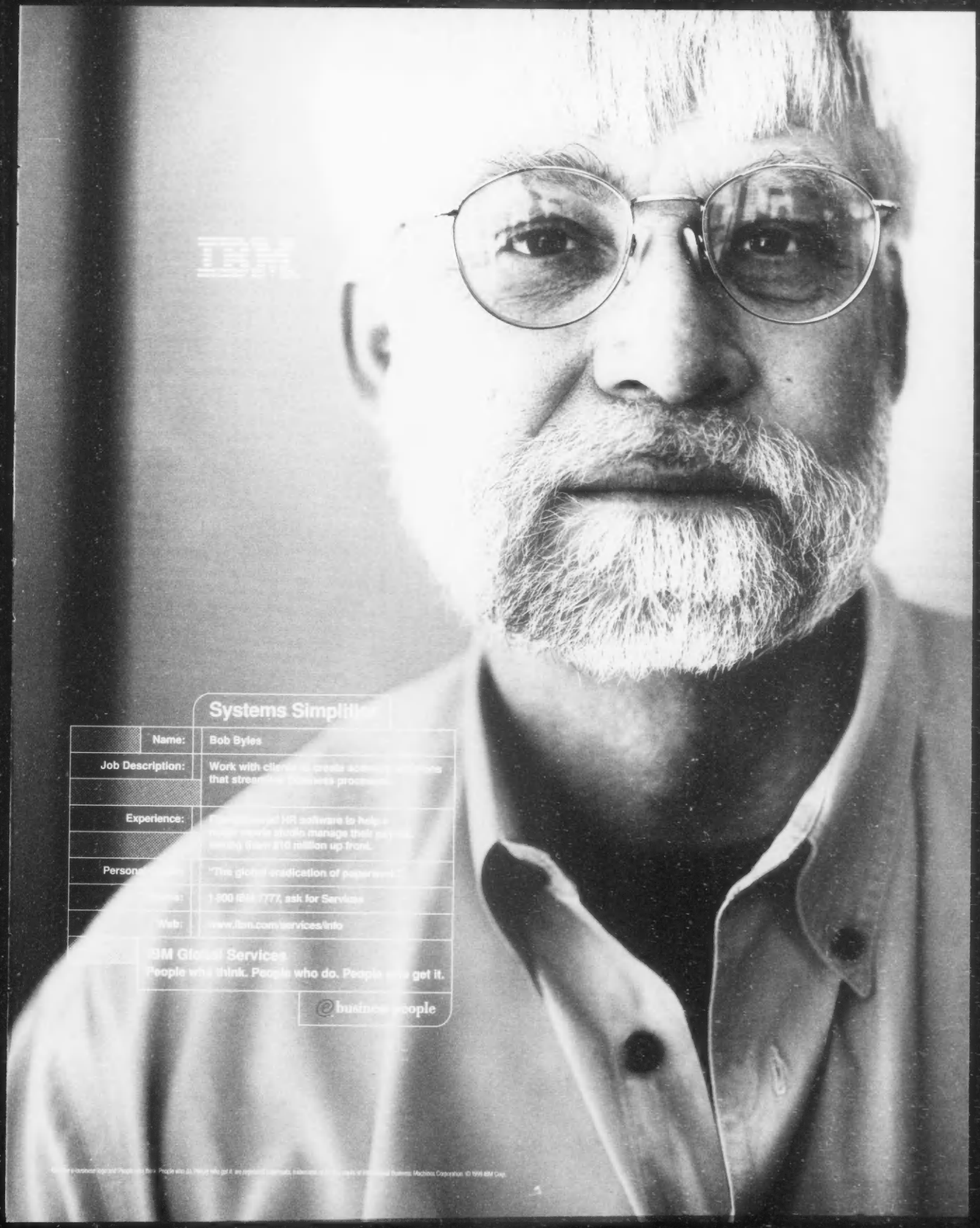
Historically, this has been the province of client/server applications – OLAP tools like Essbase and data mining systems like SAS Institute Inc.'s Enterprise Miner. These are useful and powerful, but they lose steam when data grows to terabyte levels – the client/server model just can't handle that much data.

Middleware

Another area of competition is middleware that joins disparate data sources, such as electronic data interchange, SQL or IBM's DataJoiner. These are powerful conversion and translation tools, but they generally don't provide analytical capabilities or query-generation intelligence. Middleware may be a good choice for moving data from a few systems into a single data warehouse. What nQuire adds that these tools lack is request-generating intelligence (for example, knowing which queries to direct to which servers), calculations and a simplified view of information.

Enterprise Portals

This is the newest area. It delivers the intranet to the extended enterprise by combining structured data from specific systems with unstructured data from Web sources. The latest entrant is Microsoft Corp.'s Digital Dashboard and its newest Exchange server. "Most current portals, Microsoft's included, deal with collaboration and unstructured stuff. They're focused on document management and content management," says Barbetta. He says nQuire complements such portals by providing dynamic live access to structured data. "We don't require that data be joined, and we can handle data that's distributed across different applications and locations."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Enterprise Application Integration

BY DAVID ORENSTEIN

EVERY BUSINESS has processes, but a typical company's applications rarely work together or share data to support them. With a lot of effort and money, enterprise application integration (EAI) can solve that problem.

A retailer fulfilling orders in multiple channels or a financial services company looking to cross-sell investments and insurance could be ideal candidates for EAI. Poorly integrated applications will either slow down a company's ability to exploit new opportunities or slow customer service to a pace that competitors can beat.

"Ultimately, doing business on the Internet will require you to address EAI," wrote John Mann, an analyst at Patricia Seybold Group in Boston, in a June report. "Users will notice if they enter an order via the Internet and soon afterward cannot obtain correct and consistent order status information."

Kimberly Knickle, an analyst at AMR Research Inc. in Boston adds: "Companies need to be integrated internally. I need the information to be with everyone who is part of my company. I want to be able to support business processes."

What a company doesn't want, however, is to completely rewrite legacy applications or to lock itself into a rigid system, she says. "You want this done quickly, and you want it to be flexible."

EAI software provides an answer, analysts say, by causing existing and new applications to exchange data via messages governed by the rules of the business process. The user models the business process and defines the rules that the applications should follow to make it work. A message broker routes the messages according to the rules. The data in the messages is translated along the way into whatever format each application needs.

Because EAI software remains largely independent of the individual applications it connects, the business processes can change and grow without requiring changes to the applications. But the following five layers of technology within EAI must first be implemented to achieve that eventual flexibility, Knickle says:

■ **Business process support:** Many vendors provide tools that let users visually diagram business processes. This is where users can declare rules for each message, such as "when an order is complete, have the order application tell the accounting system to send a bill and alert shipping to send out the product." Some tools include "intelligent routing" capabilities that can look at a message and figure out what should be done with it next in the process, Knickle says.

■ **Transportation:** Data can be routed point-to-point or with an architecture called publish/subscribe, in which an application sends messages to applications that have told the broker they're interested. Depending on the network and platforms the applications reside on, this could be done with middleware such as database drivers, component object models or messaging middleware.

■ **Services:** Messages need several services to successfully carry out missions. According to Mann, these services include the following: queuing, to store messages if a receiving application is slower than a sending one; transactional integrity, to confirm that a transaction has completed before a message is sent or acknowledged as received; message priority; error handling; and "hooks" that let network management tools control traffic.

■ **Interfaces:** EAI software gains access to various applications by attaching interfaces to them. The interfaces interact with applications either via descriptions they provide to their platform's component model or by taking advantage of the program's application programming interfaces, Knickle says.

■ **Transformation:** Because not all applications store data the same way or in the same format, most EAI software includes a way to convert data into whatever form the receiving applications require. Some software includes tools that let users visually "map," or coordinate, one application's data formats with another's.

The impact of implementing EAI in an organization is widespread, Mann says. "[The cost] is in the hundreds of thousands to a few million [dollars], depending on size and scope," he said in an interview. Some companies he has studied have sought to integrate scores of applications, resulting in substantial complexity and cost.

EAI implementations also require skills and experience that, because of the newness of the concept, aren't abundant. The largest companies, because of smaller-scale experiences with different kinds of middleware, often have teams of architects and developers who can handle the task, Mann says.

While the effort is likely to be carried out by the information technology staff, several lines of business must buy into the concept, because business processes rarely stay within one department, Mann says. Either a CIO, chief operating officer or other high-ranking officer usually needs to manage the process.

The scope and revenue potential of EAI implementations have caused vendors to spring up all around the marketplace. In an April report, Knickle counted about three dozen vendors. Wall Street is egging them on, too. Two initial public offerings this summer of EAI company stocks doubled or tripled their value on their first day of trading. ◗

DEFINITION

Enterprise application integration (EAI) involves linking applications, whether purchased or developed in-house, so they can better support a business process. Although there are myriad vendors that offer a variety of approaches, most packaged EAI software will offer users tools to model their business processes and link the applications with middleware that can make each application communicate via data messages.

How it works:

❶ An order comes in via the call center, mail, e-mail, the Web or fax.

❷ Customer information captured in the order process is sent to a "new customer" process, which distributes the new customer information to multiple applications and databases.

❸ Once the order is validated (customer, credit, items) relevant details are sent to order fulfillment - which may pick the requested items from inventory, schedule them for manufacture or simply forward them.

❹ Fulfillment returns status and shipment info to the order-entry system . . .

❺ . . . and to the call center, which needs to know about outstanding orders.

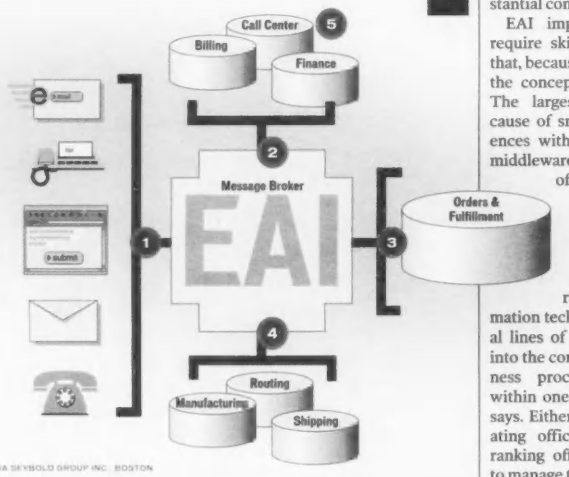

CHART SOURCE: JOHN MANN, ANALYST, PATRICIA SEYBOLD GROUP INC., BOSTON

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FOR IT LEADERS

EAI

ENTERPRISE APPLICATION INTEGRATION

Everybody wants to get into the act

BY DAVID ESSEX

Any vendor that connects two pieces of code can claim to be doing enterprise application integration (EAI). But no one seems to have come up with an off-the-shelf, load-and-run EAI product.

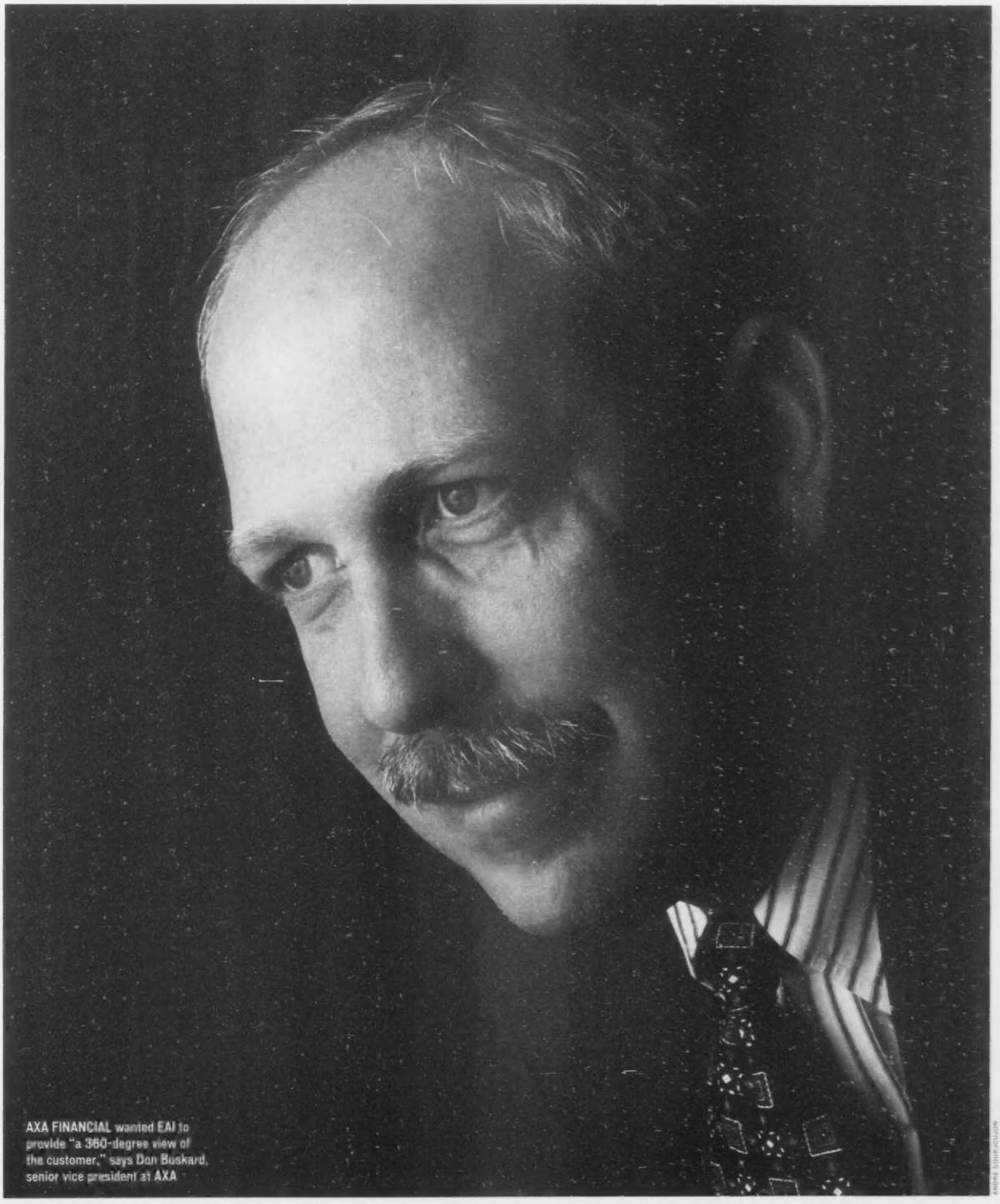
Organizations spend an average of 45% of their information technology budgets on application integration, a demand that could propel sales of EAI products from $3.4 billion today to $8.9 billion in 2003, according to WinterGreen Research Inc., a Lexington, Mass.-based analyst group.

Integration is a time-consuming business, and you can tell that just by talking to the managers behind such projects. They must reduce the time to market for that new e-commerce site and integrated call center. They need additional programming time to compensate for the 80% of resources already spent on hard-coding interfaces between programs. They're running out of time to integrate the customer databases of two merging companies before the management-imposed deadlines.

EAI software tries to automate such integration nightmares. Performed successfully, an EAI rollout speeds up software adoption and reduces labor costs. It might provide a graphical environment for mapping the fields from one inventory database to another. Or it can deploy prepackaged messaging links between two popular enterprise applications.

The rush to implement information-rich e-commerce sites, especially for business-to-business, is exacerbating the need for EAI, analysts say. It's crucial in implementing automated cus-

EAI, page 76



AXA FINANCIAL wanted EAI to provide "a 360-degree view of the customer," says Don Buskard, senior vice president at AXA

Continued from page 74

tomer service and managing corporate mergers, which often throw incompatible systems into the same enterprise network.

True EAI software provides some generic level of communication across an entire enterprise and among many and a variety of mission-critical applications. It generally falls into one of four categories: database conversion, application-to-application integration, message brokering, business logic and framework tools.

Today's EAI champions include New Era of Networks (NEON) in Englewood, Colo.; TSI Software International Ltd. in Witton, Conn.; Software Technologies Corp. in Monrovia, Calif.; CrossWorlds Software Inc. in Burlingame, Calif.; Candle Corp. in Santa Monica, Calif.; Active Software Inc. in Santa Clara, Calif.; Software AG in Germany; and Tibco Software Inc. in Palo Alto, Calif. But IBM is, and has been for some time, the 800-pound gorilla of EAI.

IBM's MQSeries message-queuing software underlies many EAI efforts. It's "the de facto industry standard for sending messages in distributed computing environments," Wintergreen analysts wrote in their 1999 EAI report.

No one expects EAI to be off-the-shelf soon. Licenses for top EAI tools cost from $100,000 to several million dollars, typical for any enterprise-level tool that requires a high degree of customization and postsale hand-holding. Vendors often provide weeks of on-site start-up help, literally becoming co-developers with their customers.

But despite EAI's reputation as a nascent technology, "it works," says Tom Dwyer, an analyst at Aberdeen Group Inc. in Boston.

Yet to come is a comprehensive EAI program, though framework vendors lay some claim to having a turnkey EAI. Such framework software is "like system management for EAI," says Sue Eustis, Wintergreen's president.

"The way EAI is evolving is, it's a 'plug,'" Eustis says. "You plug it in on one end and the other end, and it works. It's evolving toward comprehensive solutions that hide the complexity from the application."

EAI CASE STUDY: AXA FINANCIAL

Shedding New Light on Customer Data

THE COMPANY: AXA Financial Inc. (formerly The Equitable Cos.), a New York-based, diversified financial-services firm with 14,700 employees.

MANAGER: Don Buskard, senior vice president.

THE PROBLEM: Unifying AXA's "stovepipe" systems, which contain data on customers of its parent company's Equitable Life Insurance division.

Among the many older systems are IBM MVS and Corporate Service Amendment mainframes; IBM's DB2, CICS and IMS; and Oracle Corp. servers.

"Right now, the customer service person would have to do a query into each database," says Buskard. The desired end: to access "a 360-degree view of the customer," he says.

To solve that problem, Buskard's IT department — which had been doing EAI in-house since 1992 — was charged in August 1998 with implementing a FileNet Corp. document-imaging and workflow system to support policyholder maintenance performed by the life insurance division's 750 employees. But that system needed to get data out of the stovepipe systems.

EAI'S ROLE: AXA chose the transactional and security components in the Roma Business Services Platform from Candle largely because it had been happy with Candle's mainframe products. (Roma is a network-oriented, nonserver-dependent "transactional backplane" for plugging in applications, says Candle Chairman Aubrey Chernick.) "We're an IBM shop," Buskard says, "and we liked the way Roma abstracted MQSeries for us."

Roma went in at the start of this year, and on Aug. 1, AXA completed a pilot of the system, which it plans to put online this month. Because the system is tied in to Equitable's call center, customer service representatives can quickly find customers' records. Customers can visit a Web site to view balances and update accounts.

HAND-HOLDING: Candle provided consulting, says Chernick, and AXA continues to stay in touch with him and others about product improvements.

CHALLENGES: "We did have to resolve how FileNet and Roma work together," Buskard says. Installing a connectivity hub was "thorny," he says.

Buskard says that although he's happy with Roma, he has ideas for improvements that have been heeded by Candle.

"We're looking for Roma to be able to provide more transaction certification," Buskard says. "The closer Roma can get to being CICS-like in terms of its speed, certification and authentication, the happier we'll be."

RESULTS: "The big value that Roma has is the ability to integrate all the back-end systems for us so we don't have to do it in FileNet," says Buskard. That saves time and labor costs.

EAI CASE STUDY: INTERPRISE

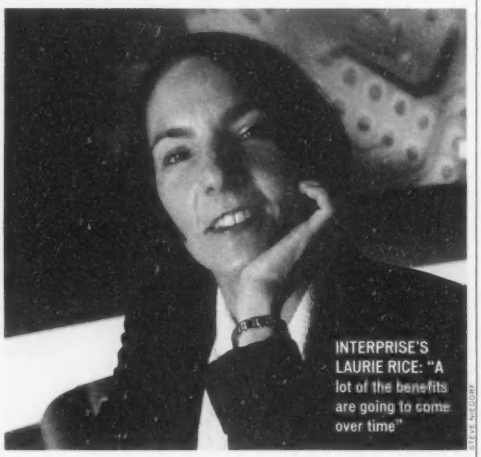
Servicing Customer Service

THE COMPANY: Interprise Networking Services, the Denver-based division of US West Inc., a nationwide telecommunications vendor focusing on 14 Western and Midwestern states. Interprise's 1,400 employees sell networking and data services, such as Digital Subscriber Lines, and develop products for US West.

MANAGER: Laurie Rice, executive director.

PROBLEM: Interprise's system for tracking customers, products and contracts that were involved in its maintenance-contract business wasn't delivering the data the company's customer service department needed. Custom code written by the IT department proved difficult to maintain.

Interprise decided to migrate to a Clarify Inc. customer service front end built on existing Oracle Financials. It would use SYS, an Oracle-based database running on a Sequent Computer Systems Inc. server at the back end. But it needed something to bridge the gap between old and new.



INTERPRISE'S LAURIE RICE: "A lot of the benefits are going to come over time"

STEVE NICOLAY

EAI'S ROLE: Interprise considered writing SQL queries as point-to-point interfaces but dismissed it as impractical.

It settled on CrossWorlds' United Application Architecture (UUA) suite, says Rice. UUA provided "collaborations" — essentially business objects and the mapping logic they needed to talk to applications — for key entities such as customers, shipped products and contracts.

The maintenance-contract phase went into effect in July 1998. The new system will be extended to Interprise's equipment-reselling business later this year and to the Internet-services business early next year after a Y2K freeze. The latter project will employ CrossWorlds' UUA to link Clarify with Cupertino, Calif.-based Portal Software Inc.'s billing software.

HAND-HOLDING: "CrossWorlds has been a very good partner for us," Rice says, adding that each stage of the conversion has rarely required more than three or four CrossWorlds people in-house. "We have found that the software doesn't need a lot of support, but you do have to understand how it works." Interprise continues to hold a maintenance contract with CrossWorlds.

CHALLENGES: "We were one of CrossWorlds' first customers, and they did not have all of the Oracle collaborations built at the time," Rice says. "There were those kinds of 'gotchas,' but they've all been addressed." The team spent a great deal of time modifying the business logic in CrossWorlds' connectors to fit Interprise's older applications.

RESULTS: "We have some significant [return on investment] results, but it's hard for me to tie that specifically to EAI," Rice says. "A lot of the benefits are going to come over time, as you integrate other applications."

EAI CASE STUDY: VF CORP.

Breaking the Chains Of Supply Chain

THE COMPANY: VF Corp., an apparel manufacturer in Greensboro, N.C., known for its Wrangler, Lee and Jantzen lines.

MANAGER: John Davis, vice president of business systems supply chain.

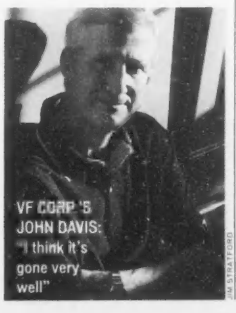
PROBLEM: A 1994-95 effort to improve service and institute best practices resulted in the consolidation of 14 divisions into five "coalitions," linked by SAP R/3 at the core transaction level.

VF chose Irving, Texas-based i2 Technologies Inc.'s Rhythm for supply-chain planning; Cary, N.C.-based SAS Institute Inc.'s data mining software; Atlanta-based Logility Inc.'s Value Chain Solutions for forecasting; and Tolland, Conn.-based Gerber Technology Inc.'s Product Data Management.

The "writing was on the wall," recalls Davis. The company needed to tie this alphabet soup together — and fast.

EAI'S ROLE: A 1997 decision to install IBM MQSeries messaging narrowed the choice to best supporters of MQSeries TSI Software and NEON. The company went with NEON's MQSeries Integrator, NEON-Adapter for R/3 and business-logic and formatting tools. Davis says the company liked the R/3 tool and, as an IBM shop, it was encouraged by NEON's partnership with IBM.

After committing to production in November 1998, VF trained 20 people to use NEON's graphical user interface (GUI) front end to develop and manage the interfaces that would link applications with R/3 modules used by VF's Jeanswear coalition. The system goes online next month.



VF CORP.'S JOHN DAVIS: "I think it's gone very well"

JIM STRATFORD

HAND-HOLDING: Davis lauds NEON's efficiency. "We only spent 20% of what we budgeted for consulting," he says. They required less than 30 days of on-site support. VF remains in close contact with NEON, sharing knowledge and suggesting packaged interfaces that could save on custom coding.

CHALLENGES: Bugs were encountered during the SAP integration but, "IBM and NEON responded pretty quickly," Davis says. "There have been no show-stoppers for five months," but Davis says the new GUI "leaves a little to be desired. It's not as intuitive and user-friendly as it could be." He's hoping a promised upgrade will fix the problems.

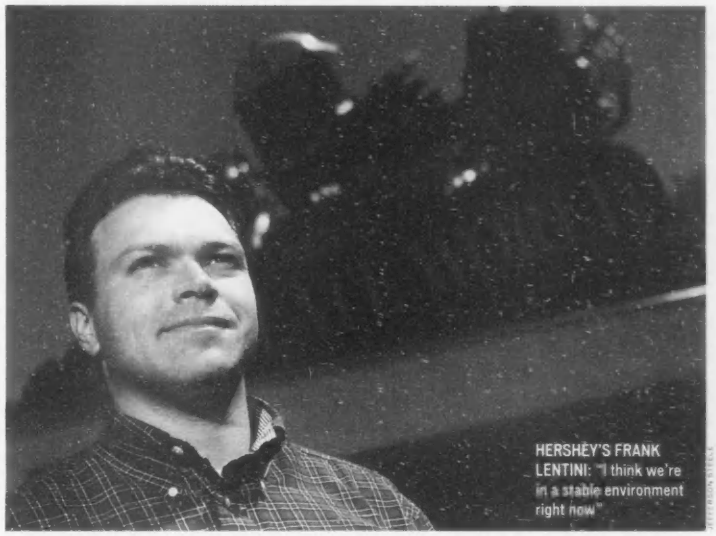
VF's biggest integration challenge at the moment is the i2 Rhythm installation. It "has data structures that we don't even recognize," Davis says.

RESULTS: VF is starting to see the benefits of its new processes, designed to provide daily, store-by-store inventory data that will allow the company to better predict the color and type of jeans to ship and thus better meet customer demand.

"We also see a tremendous opportunity in reducing inventory levels," Davis says.

From an IT perspective, VF's EAI package should save time and money by simplifying integration and application support. "Now, if we add an application, it doesn't need to be known by the sending application," Davis says, crediting NEON's hub-style architecture.

"I think it's gone very well," he says. "I had a lot of misgivings, given that we were under a lot of pressure to install these systems and install SAP."



HERSHEY'S FRANK LENTINI: "I think we're in a stable environment right now"

JEFFERSON BATTEY

EAI CASE STUDY: HERSHEY FOODS

Goodbye, Willy Wonka; Hello, R/3

THE COMPANY: Hershey, Pa.-based Hershey Foods Corp., a $4 billion manufacturer and distributor of chocolate and other confectionery products.

MANAGER: Frank Lentini, lead computer systems analyst.

PROBLEM: Some of Hershey's outdated mainframe systems needed to go.

In 1997, the company's managers decided to replace the systems with SAP's R/3 and "bolt-on" applications such as San Mateo, Calif.-based Siebel System Inc.'s pricing and promotions software and Rockville, Md.-based Manugistics Inc.'s inventory, transportation and supply-chain management and forecasting applications.

High on the list of requirements: The new software must talk with Hershey's new EDI system, which links the company to customers and suppliers. In addition, Hershey's needed connections to Oracle 7.3x databases and IBM's MQSeries.

The change required writing application-to-application interfaces and data conversions.

EAI'S ROLE: Hershey chose to connect R/3 bolt-ons and older applications to TSI's Mercator middleware, running on a dual-processor Sun Microsystems Inc. Solaris server, according to Lentini. "We used Mercator for interfaces and data conversion because of its built-in integration to R/3, MQSeries and Oracle." A half-dozen Mercator mappers monitor the system and write any interfaces that might be needed, such as the recent mapper that pushed e-mail sales orders into R/3.

HAND-HOLDING: TSI provided in-house consulting and training during the R/3 rollout in Canada last year. The last R/3 installation in the U.S. was completed in July.

"Right now, we don't have any TSI consultants in," says Lentini, who credits the trouble-free install to an experienced development staff and Mercator's ease of use.

CHALLENGES: "There were some issues that came up, as with any software," Lentini says, declining to elaborate. "I think we're in a stable environment right now."

Still, Lentini has asked TSI to remedy one thing in Mercator 1.42: Hershey wants advanced debugging tools built in to the product.

"We had a lot to learn, and it was all new," Lentini recalls. "We moved from a mainframe MVS environment to a Unix environment. Our legacy people were mostly Cobol programmers. Even learning Mercator was another challenge, in that it's object-oriented, and most of us are from a mainframe programming background."

RESULTS: Lentini says it's too early to quantify the benefits of the Mercator and R/3 combination. But already, "one of the big benefits is quick changes to our production applications that need a quick turnaround time," he adds.

Hershey, Lentini says, has gained flexibility in supporting future business needs and a more cost-effective way to build interfaces between programs. Lentini says his group plans to use Mercator to build interfaces between other non-R/3 applications. ◗

Essex is a freelance writer in Antrim, N.H.

MOREONLINE

For more on enterprise application integration, visit our Web site.
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Technology Happenings

- **Pixar Animation Studios'** *Tin Toy* becomes the first computer-animated film to win an Academy Award, receiving the Oscar for Best Animated Short Film.
- Compaq Computer Corp. and other PC-clone makers develop **Enhanced Industry Standard Architecture**. It uses a 32-bit bus.
- Steve Jobs' company, **Next Computer Inc.**, releases the Next computer. It isn't successful; at $6,500, it runs too slowly.
- Jarkko Oikarinen develops **Internet Relay Chat.**
- **Apple Computer Inc.** sues Microsoft Corp. and Hewlett-Packard Co. for copyright infringement regarding Microsoft's Windows 2.03, HP's NewWave and the Macintosh operating system.
- The **Open Software Foundation** is founded.
- **WordPerfect Corp.** ships WordPerfect 5.0.
- **Lotus Development Corp.** ships the 4 millionth copy of Lotus 1-2-3.
- An article in the *American Journal of Industrial Medicine* reports that pregnant women who have worked with **video display terminals** (VDT) for more than 20 hours per week are 80% more likely to suffer a miscarriage than women who don't use VDTs.
- **IBM** introduces the midrange **AS/400** mainframe computer.
- President Reagan signs the **Computer Security Act.**
- **Motorola Inc.** unveils the **88000** line, its RISC microprocessor chip set.
- Microsoft announces **SQL Server.**

Other Notables

- The play ***Driving Miss Daisy*** wins the Pulitzer Prize. It wins the Academy Award for Best Picture the following year.
- **1988 Best Picture:** *Rain Man*
- The **Summer Olympic Games** are held in Seoul, South Korea; the Winter Olympics are held in Calgary, Alberta.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

Worm Disables Net

BY LESLIE GOFF

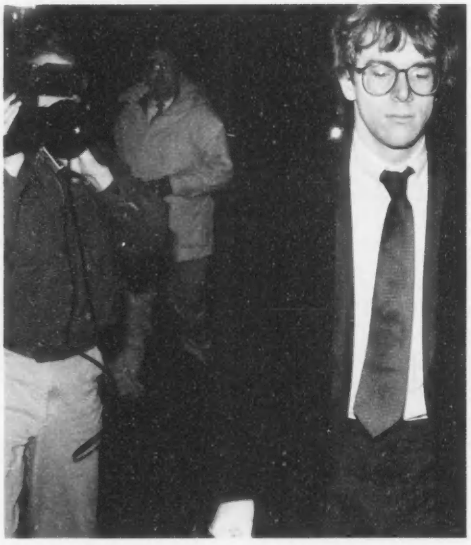
IF SOMEONE were to release a worm today equivalent to the one Robert Tappan Morris Jr. unleashed on the Internet on Nov. 2, 1988, it could potentially bring about a global social and financial crisis.

The Morris worm crashed between 10% and 20% of the 60,000 to 80,000 computers hooked up to the Internet. Today, an attack that disabled just 10% of the hosts on the Internet would afflict more than 5 million machines, notes Mark Zajicek, an operations support liaison at the Computer Emergency Response Team (CERT) Coordination Center in Pittsburgh.

Even more devastating would be a worm that attacked routers, as opposed to hosts and computers, says Ira Winkler, a security expert and president of the Internet Security Advisors Group in Severna Park, Md. Each router that crashed could take 100,000 users down with it. "A worm that affected those could take down the whole Internet," Winkler adds.

Moreover, whereas the Morris worm interrupted communication among a relatively small group of university computer users, researchers and scientists, a denial of service of the same scale today would bring business to a standstill and disrupt the professional and personal lives of countless numbers of people. And though the 1988 outage lasted two days, a serious outage today could take much longer to repair, security experts say.

"You didn't have corporations relying on the Net for day-to-day business operations then the way you do now," Zajicek says. "If Web sites and e-commerce sites weren't available, there would be measurable financial effects."



ROBERT MORRIS, then a graduate student at Cornell University, never publicly stated his motivation for unleashing the worm on the Internet

But a major difference in the Internet today compared with the Internet in 1988 that could offer a layer of protection is the diversity of hosts, operating systems and applications, which "helps minimize the rapid spread of a worm," Zajicek adds.

1988

The worm took advantage of several bugs Morris had found in source code, including unpatched holes in the sendmail and "finger" programs. It replicated itself at a rate much faster than even Morris himself reportedly anticipated, according to an account in *Cyberpunk: Outlaws and Hackers on the Computer Frontier*, by John Markoff and Katie Hafner.

Markoff, a reporter for *The New York Times*, played a key role in uncovering Morris' identity. When the worm began crashing computers across the country, Morris got scared. The next day he called *The Times* and eventually started a dialogue with Markoff, using only the name Paul. In one conversation, however, he accidentally referred to himself by his Internet log-on name — rtm. Using this inadvertent clue, Markoff, with the help of a colleague, discovered Morris' name, according to *Cyberpunk*.

Morris never publicly stated his motivation for unleashing the worm, which constituted the first major denial-of-service attack on the Internet. He was 24 and already viewed as an expert in Unix, the operating system he exploited to create and disseminate the worm.

Friends and Foes

Morris' friends and family maintained that he hadn't intended the widespread harm caused by the worm. Since the worm was benign, in the sense that it wasn't programmed to destroy data, he attracted other supporters in the Internet community.

But his actions also inspired a significant number of detractors. The government prosecuted him, and he was found guilty in his 1990 trial and sentenced to three years' probation, a $10,000 fine and 400 hours of community service.

The worm, and Morris' prosecution and conviction, caught the world's attention. Within two weeks of the attack, the Department of Defense contacted Carnegie Mellon University's Software Engineering Institute (SEI) about creating a central organization that could respond to similar crises in the future and facilitate solutions.

The result was the formation of CERT, a job that fell into the lap of Rick Pethia, now director of the network systems survivability program at SEI (CERT is part of that program). Pethia says the need for an organization like CERT preexisted the Morris worm.

Winkler agrees. "The attack was a catalyst, although not a good catalyst," for spurring more research into the vulnerabilities on the Internet. ▮

Goff is a frequent contributor to Computerworld. *Contact her at lgoff @ix.netcom.com.*

In a 7-1 decision, the Supreme Court upholds the power of independent counsels to prosecute illegal acts by high-ranking government officials.

Vice President George Bush (right) defeats Massachusetts Gov. Michael Dukakis (left) in the presidential election.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

The Supreme Court rules that police can search discarded garbage without a search warrant.

The USS *Vincennes* shoots down an Iranian jetliner over the Persian Gulf.

President Reagan nominates Lauro Cavazos as secretary of education. She is the first Hispanic to serve in the Cabinet.

A WORD ABOUT THE NEW MANAGEMENT TEAM: ATTITUDE

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Upstate New York

Though known for its cold and brutal winters, upstate New York has a hot and inviting IT market By Jeff Zbar

JOB HUNTERS IN ALBANY, Buffalo, Rochester and Syracuse will find ample contract and direct employment options here, recruiters say. Corporate culture varies from casual to business formal, depending on the employer.

They'll also find outdoor activities for winter and summer sports, good schools and lower housing costs than in other major markets — countered by lower salaries. "This market is a nice place to live," says recruiter Bill Winnewisser, president and owner of recruiting firm Accounting & Computer Personnel. Recruiters across the region caution that a slowdown in Y2K projects may lead to an influx of workers on the local employment market. Still, few seem to think this will quench the need for skilled workers.

Looking to head north? Read on and learn what makes these four markets unique and what skills you'll need to make it there.

SYRACUSE

Hatchery for New High Tech

THE SYRACUSE MARKET has been a hatchery for new high-tech and Internet businesses in recent years. The result? "The PC and networking marketplace is extremely hot," says Winnewisser.

Employers want skills in PC hardware and software, networking, Windows NT, Novell, Visual Basic, Access and PowerBuilder, and there's a heavy demand for network engineers and even help desk positions. With many small to medium-size businesses around, there's "a terrible shortage" of AS/400, PRG III and RPG 400 systems analysts, Winnewisser says. Management positions, though, are scarce.

With a plethora of employers in the market, workers skilled in SAP, PeopleSoft and Oracle always are in demand, and companies are paying premiums for Baan, says Tim Dermady, managing partner at recruiter Executivefit. Salaries run from $55,000 to more than $100,000, plus bonuses and relocation packages.

Two problems loom: some large companies, including Carrier Corp. and Crouse-Hinds, likely are relocating, leaving more mainframe workers than opportunities, and Y2K project completions should leave staffing overloads. This raises some concerns as to whether Syracuse will be able to absorb the workers left behind or whether it will become an employers' market. "We're on the front end of that," Winnewisser says.

ROCHESTER

Big Employers, Strong Market

XEROX CORP., EASTMAN KODAK CO., IBM, Bausch & Lomb and Paychex Inc. make up a corporate armada that keeps a solid information technology market afloat in the Rochester market.

As in other markets, Rochester employers look for skills like Web development, Java scripting, Visual Basic, C++ and Oracle development, leading to ample contract and direct employment, says Russell P. Bell, branch manager at Computer Plus Staffing Solutions. Demand runs hot and cold for network communications workers.

The market is exceptionally tight because unemployment is lower in Rochester than in other regions, adds Steve Robbins, a technical recruiter at Professional Support Inc. in West Amherst. That leaves recruiters like Robbins and employers like Paychex to tap local schools like the University of Rochester and the Rochester Institute of Technology for candidates. In fact, Paychex taps alumni networks to find recruits for its 400-person department, which is growing upward of 15% a year, says employment manager Beth Schachtman.

Market salaries start near $30,000 per year and rarely top $100,000, or from $15 to $60 per hour for contract work, Bell says. A C++ programmer with five years' experience will fetch an average of $45,000. Workers who stay keen on skills and get certified in the latest technology will find a place here, he adds.

BUFFALO

Call Centers, Growing IT Sector

KNOW VISUAL BASIC, Web programming, e-commerce or tech support? Buffalo could be the place for you.

Perched in this growing high-tech market, six call centers that provide end-user tech support all find it difficult to fill posts, says Colin Adams, human resources manager at call center Client Logic. Not only is the region not considered a high-tech haven, it's also "an old rust-belt city" blanketed in snow during the winter, he says. "We lose people just because it is Buffalo."

Internet hiring is strong, but Unix programmers are in demand, and there's still "a lot of money" for Cobol programmers — especially for short-term projects, according to Jennifer Paolini, a consultant at Dunhill Staffing System Inc. in Buffalo. Applicants with a few years' experience in a combination telecommunications and systems background, plus previous call center experience, will find openings bountiful.

There's even been an increased call for combination accounting and MIS workers — people who can match a systems background with a knowledge of the numbers, she says. "That's going to be a fairly powerful combination going forward."

With so much demand, many companies are looking to the local universities like the State University of New York-Buffalo to fill positions, many of which are entry-level contract posts. In a market with six major call centers, there's plenty of work to be had sharing that education with consumers.

ALBANY

Burgeoning IT Market

BEING A BUSINESS HUB, a university center, the state's capital and a growing high-tech sector, Albany is a growing IT market.

The tricity area of Albany, Schenectady and Troy hosts a mix of industries and technology companies. State government and supporting industry help make the hiring market robust.

The market is hot for database specialists; skilled midlevel programmers in current languages like Visual Basic, Java and C++; and good IT project leaders.

Banks, insurance companies and General Electric Co. are slated to ramp up hiring next year, and many of those companies will be seeking specialists in the Web, e-commerce and wide-area networks, according to Tom Mullen, a vice president at CMA Consulting Services, a recruiting firm in Albany.

Demand is soft for LAN designers and installers, IT manufacturing specialists and systems analysts with weak programming skills.

Though the cost of living in Albany is attractive, expect a 25% pay cut compared with other major markets. A computer programmer with three to five years of experience in a hot language commands $45,000 to $55,000 per year, while a senior database administrator will fetch upward of $75,000. ◗

Zbar is a freelance writer in Coral Springs, Fla. He can be reached at jeff@goinsoho.com.

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Programmer Analyst to plan, develop, test and document computer programs, applying knowledge of database programming techniques and computer systems, and to evaluate user requirements for new and modified programs in business and scientific applications using expertise in PowerBuilder, Visual Basic, Sybase/SQL Server, Oracle and CASE tools including ER-WIN 3.0. Requirements: Two years of college in computers and three years experience as a programmer analyst or computer programmer. Knowledge of PowerBuilder 7.2 or higher, Visual Basic, Sybase System 11 SQL Server, Oracle and CASE tools including ER-WIN 3.0. Salary: $58,000/yr. Working Conditions: 8:00 a.m. to 5:00 p.m., 40 hours/week and overtime as required. Apply: Ms. Margaret Weckerly, Acting Manager, Butler County Job Center, 226 West Cunningham Street, Butler, PA 16003. Refer to Job Order Number 6027711.

SOFTWARE ENGINEER to design, develop, test, port and maintain product and application software through object oriented design methodology using C, C++, Visual C++, MFC, Java, COM, Active-X, Socket, SGML, XML, Visual Source Safe and ClearCase under Windows 3.1/95/98/NT, UNIX, Dec Alpha and Sun Solaris operating systems; Develop Web-based applications using Dynabase Application Server, Java, Perl, CGI, DHTML, JavaScript, Netscape Enterprise Server, IIS and Access Control. Require: M.S. degree in Computer Science, or a closely related field, with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Salary: $65,000 per year, 8:30 am to 5:30 pm, M-F. Send resume to: Raghavendra Kulkarni, President, Pro Softnet Corp., 3235 Satellite Blvd., Bldg. 400, Suite 300, Duluth, GA 30096. Attn: Job NC.

SAP Consultant (multiple openings) to consult with client to define business need or problem relating to financial/ accounting applications; analyze business processes & document flow, & prepare functional specifications for same; design, develop & customize information structures using SAP (Systems, Applications & Products) module; perform data conversion from existing system to newly defined SAP system; assist in implementation of solutions; & report findings & recommendations to client; Reqs. Master's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Mgmt. Info. Systems, Bus. Admin., Management, Mech. Engg., Indus. Engg., Manuf. Engg., Comp. Engg., Electrical or Electronic Engg., Statistics or Mathematics or its foreign educ equiv; $59,500/yr, 40 hrs/wk, 8a-5p. Submit resume of C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123, J.O. # 5027734

SOFTWARE ENGINEER: Design and develop network systems software for DOS/ Windows, WindowsNT, UNIX, Tandem, OS/2 and Novel Network platforms including client /server based connectivity software, systems software and peer-to-peer communication software using TCP/IP, UDP/IP, IPX/SPX and NET BIOS. Will use C and Assembly languages extensively. Will code and test networking software under DOS/Windows, UNIX and Novel Netware platforms. Requires: M.S. in Computer Science or Electrical Engineering. Must have demonstrated knowledge of either Oracle or Sybase and of embedded SQL programming. 40 hrs/wk (8 to 5) $71,302.40 Send two (2) copies of resume responses to Job Order #99-273, P.O. Box 989, Concord, NH 03302-0989.

SOFTWARE ENGINEER (Columbia, SC) to design, develop, test and maintain client/server application software for the insurance industry using C, C++, COBOL, DB/2, CM2, PM and OS/2 on IBM PC and mainframe machines. Require: M.S. degree in Mathematics, Computer Science, or a closely related field; Must have a demonstrated ability to perform the stated duties gained through previous work experience/academic coursework. Salary: $54,500/year; M-F; 8:30 a.m. to 5:15 p.m. Send resume to: Elizabeth Haney, Asst. V.P., P.M.S.C., 1 P.M.S.C. Center (Int. Of I-77 & US 21 N), Blythewood, SC 29016; Attn: Job HK

Database Analyst wanted by IS/IT Consulting Services Co in Union, New Jersey for unanticipated locs throughout US. Analyze, design, develop, implement, tune for performance Oracle databases using UNIX. Oracle and its tools and products (e.g., Pro*C, PL/SQL, SQL Plus, Oracle forms), C. Must have Master's in Comp. Sc., or Comp. Engg. and 2 yrs of software exp. M-F 8: 30am to 5:30pm. 40hrs/wk $70,000/yr. Respond by resume to: HR Dept, #2658, Patel Consultants Corp., 1525 Morris Ave., Union, NJ 07083.

PROGRAMMER ANALYST

Programmer Analyst to design, develop and test computer software for business and financial applications applying principles and techniques of computer science and mathematical analysis; analyze software requirements for feasibility of design and hardware interface; design and direct software system testing procedures; and use expertise in Oracle Financials 10.7, PL/SQL 2.3, Reports 2.5, Forms 4.5 and SQL Forms 2.3. Requirements: Two years of college and one year of training in computers and four years experience as a programmer analyst or computer programmer. Knowledge of Oracle Financials 10.7, PL/ SQL 2.3, Reports 2.5, Forms 4.5 and SQL Forms 2.3. Salary: $78,000/yr. Working Conditions: 8:00 a.m. to 5:00 p.m., 40 hours/week. Apply: Mr. Tom Dembosky, Manager, Indiana Job Center, 350 N. Fourth Street, Indiana, PA 15701. Refer to Job Order Number 5027768.

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support multi-tier, client/server application software using C/C + + , Visual C + + (MFC, Active-X, COM), Visual Basic, RDBMS, SQL, PowerBuilder, Fortran, Java, JavaScript, HTML/ ASP, IDL, System Architecture CASE tool, and TCP/IP and Socket programming on Unix, Windows 95/98, Windows NT and MS-DOS operating systems. Require: M.S. degree in Computer Science/ Engineering, Computer Information Systems, or a closely related field; Must have a demonstrated ability to perform the stated duties gained through previous work experience / academic coursework and projects; Extensive travel on assignment to various client sites within the U.S. is required. Salary: $64,000 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to: Jeanette Aikins, Office Administrative Specialist, Axiom Systems, Inc., 2500 Northwinds Parkway, Suite 440, Alpharetta, GA 30004; Attn: Job 91

SAP Consultant (multiple openings) to consult with client to define business need or problem relating to materials management & production planning applications; analyze business processes & document flow, & prepare functional specifications for same; design, develop & customize information structures using SAP (Systems, Applications & Products) module; perform data conversion from existing system to newly defined SAP system; assist in implementation of solutions; & report findings & recommendations to client; Reqs. Master's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Mgmt. Info. Systems, Bus. Admin., Bus. Mgmt., Management, Management Science, Mech. Engg., Indus. Engg., Manuf. Engg., Comp. Engg., Electrical or Electronic Engg., Statistics or Mathematics or its foreign educ equiv.; $59,500/yr, 40 hrs/wk, 8a-5p. Submit resume of C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123, J.O. #7055442

Needed Software Engineer to design, develop & maintain multi -threaded client server applications in a UNIX Windows NT environment using Oracle as a relational database management system. Re-engineer existing legacy applications to client server architecture using generic algorithms and Object Oriented Technology such as C++, utilize GUI tools such as Visual C++ & Pro*C for database access for design & development process, implement client server remote procedure calls (RPC) using Distributed Computing Environment (DCE). Required M.S. in Computer Sc./Computer Applications plus 4 yrs. exp. as I.T. professional, exp. to include 3 yrs. exp. in distributed computing environment, Unix, Windows NT, C++, Visual C++, PRO*C, RPC (Remote Procedure calls). High mobility, must have proof of authority to engage in employment. 40 hr. per week, 9:00 A.M. to 5:30 P.M., salary $64,000 per year. Submit Resume in duplicate to P.A. Job Center, Job Order No. 1027922, The Philadelphia Job Bank, 444 N. 3rd St.-3rd Flr., Philadelphia, PA 10123.

Software Engineer (3 openings)--Analyze, design, and develop Object Oriented Systems and Database Systems on heterogeneous platforms in client-server systems for financial or business applications using C++, Tuxedo, Pro*C/C++, Oracle, MSVC++, PB on Unix/Windows NT based systems. Design and develop software tools using shell, Perl scripts to test the software system. Maintain software system using source code control SCCS or Clear Case. Design interface using RPC, TCP/IP. Req. Master's degree in Computer Science/Engineering or related discipline plus one yr exp. in job offered. Resume to: Narayana Rekapalli, Omnisoft Inc. 1265 Compass Pointe Crossing, Alpharetta, GA 30005.

Senior Test Development Engineer: Develop test solutions for new products utilizing programming and electronic circuit analysis skills. Drive test development and equipment strategies and support product characterization and release to production. Responsibilities include design, debug, and correlate test hardware and software of ATE systems; support resolution of yield, applications and test issues. Requires: M.S. in Electrical Engineering, knowledge of Automated Test Equipment (ATE), circuit analysis, data analysis, Statistical Process Control (SPC) techniques, and C and Pascal programming. 40 hrs/wk (9 to 5) $63,094/yr. Send two (2) copies of resume/responses to Job Order # 99-293, P.O. Box 989, Concord, NH 03302-0989.

SYSTEMS ANALYST to analyze, design, test, implement, maintain and support software systems in Unisys LINC development environment on an A-series mainframe; Design GUI front-ends using Unisys Designer Workbench and back-end database using DMS II; Use BL Source for source control, BL Sched for job scheduling and BL Pack for retrieval; Visualize and document application design using LDA III Case tool; Utilize Sales and Distribution module of SAP R/3; Create reports using ABAP/4; Migrate ERP applications to SAP R/3. Require: B.S. degree in Computer Science, Electronic Engineering, or closely related field, with two years of experience in the job offered. Extensive travel (50%) on long term assignments to various unanticipated client sites within the U.S. is required. Salary: $53,000 per year, 8 am to 5 pm, M-F. Send resume to: Sanjeev Tirath, Director, Pyramid Consulting Inc., 5335 Triangle Parkway, Suite 510, Norcross, GA 30092; Attn: Job PY

SAP Consultant (multiple openings) to consult with client to define business need or problem relating to manufacturing application; analyze business processes & document flow, & prepare functional specifications for same: design, develop & customize information structures using SAP (Systems, Applications & Products) module; perform data conversion from existing system to newly defined SAP system; assist in implementation of solutions; & report findings & recommendations to client; Reqs. Master's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Mgmt. Info. Systems, Bus. Admin., Management, Mech. Engg., Aerospace Engg., Indus. Engg., Manuf. Engg., Comp. Engg., Electrical or Electronic Engg., Statistics or Mathematics or its foreign educ equiv; $60,550/yr, 40 hrs/wk, 8a-5p. Submit resume of C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123, J.O. # 7055454

Software Engineers (Multiple Openings) sought by Software & IT Consulting Co. in New Brunswick, NJ. Must have Bachelors w/any Technical/ Business related major and 2 yrs exp desrg applics using any of the following:

i) VB, SQL Server
ii) Java/HTML, Oracle
iii) Unix/NT System Administrator
iv) Oracle, PL/SQL
v) C++/Unix/Oracle
vi) Web Developer/ASP/Perl
vii) SQL Server DBA
viii) Oracle DBA
ix) PowerBuilder/SQL/Oracle
x) Informix 4GL

Respond to: HR Dept, Universal Software Solutions, Inc, 92 Bayard St, New Brunswick, NJ 08901

ELECTRONIC COMMERCE ENG Admin electronic commerce (EC) servers. Create/maintain scripts for automation of EC transactions. Set up/maintain customer accts. Provide tech support for secure data transfer capability. Install new hardware/ software. M.S. Computer Science or Eng plus 1 yr exp as Programmer/Analyst req'd. Competence in PROGRESS, TCP/IP suite, data security, PGP, RSA, SSH, PERL, UNIX (Solaris, SCO Opensever & Unixware), RedHad Linux & Caldera OpenLinux, Connect:Direct, FTP & SCP $53,500/yr, 40 hrs/wk, OT as needed. Send resume to: Premiere Technologies, Inc. REF# ZY1, 3399 Peachtree Rd NE, #400, Atlanta, GA 30326.

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Director of MIS

The GCSAA is seeking an exceptional individual to implement, expand and support the association's long-term IT strategies. Reporting to the CFO, this position works closely with senior management in developing strategies and tactical plans for business operations and serves as liaison for IT planning with intra/inter departmental matters and cross-functional project teams. Responsibilities include directing and coordinating all information services and communication activities, supported by a staff of four. Requires five years experience managing technologies, including client/server, systems design and development, networking, groupware, RDBMS, telecommunications, and internet/intranet. Knowledge of E-commerce and data-mining technology a plus. Minimum three years in a senior management position demonstrating analytical expertise; motivation and development of others; and strong oral and written communication skills. Bachelor's degree required; MBA or master's degree in a related field a plus. Send cover letter, resume and salary requirements by October 15, 1999 to:

Golf Course Superintendents Association of America
Attn: Human Resources - MIS
1421 Research Park Drive
Lawrence, Kansas 66049-3859
Email to: hrmail@gcsaa.org

SR. ORACLE DATABASE ADMINISTRATOR

Responsibilities include: design of relational and multi-dimensional database using Designer 2000 case tools; perform data modeling, logical/physical database design and implementation; design the data warehouse/Decision Support Systems for Credit Card Transaction processing systems for Corporate level; conduct performance tuning, capacity planning, support, manage, monitor resource utilization/installation of Oracle servers on UNIX/NT Operating Systems; implement database security and network configuration; monitor database using Oracle enterprise manager, BMC patrol and around the clock database production support. Requirements include an MS in Computer Science, and 3 years' experience. Will accept a BS in Computer Science with 5 years experience.

ORACLE FINANCIALS DEVELOPER

Responsibilities include: analyze, design and document software systems; build software systems in PL/SQL, SQL*PLUS, Developer 2000 (forms 4.5, reports 2.5). Perl for customizing Oracle Financial applications and other internal financial applications; support Oracle Financial applications. Requirements include a Master's degree in Computer Science or related field, concept of financial accounting, experience in developing PL/SQL processes, SQL*PLUS, SQL*LOADER, UNIX skills, Shell Scripting and technical experience in Oracle Financial applications.

Please forward your resume to: Attn: Kristen Scott, Paymentech, 1601 Elm St., 14th floor, Dallas, TX 75201. An equal opportunity employer.

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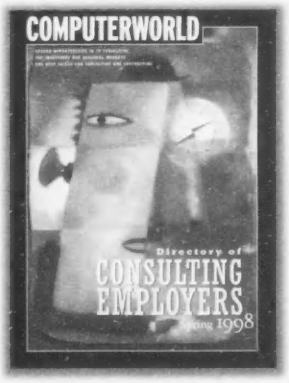

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SAP/ EDI mainframe Consultant

Software Systems & Solution, Inc. is looking for goal-oriented team players to design, develop and implement SAP software for business applications. Must have experience in relation database management, IBM mainframe based development, and SAP data management, with proficiency in SAP ABAP and EDI. BS and 1-2 yrs. applicable work experience required. Salary $65,000.

Please send your reply to: Herald P. Manjooran at heraldbp@aol.com or send your replies by fax to 847-995-9587.

Product Marketing Engineers needed by Austin, TX Co. involved in Design & Mftr of S/ware & H/ware to aid in selling software/hardware and to provide technical services using knowl of engg by dvlpg mktg materials and working w/R&D engg to drive future direction of product by proposing changes in eqpmt/processes/use of materials. Bachelor's in Engg, Comp Sci, Physics or Math req'd. Respond to: Maud Ann Reddehase, National Instruments Corp., 11500 N. MoPac Expwy, Austin, TX 78759. Put code PME on resume.

Programmer sought by Investment Research Co. in Chicago, IL. Must have BS in Comp Sci & 2 yrs exp converting sophisticated fin'l & investment data into existing or specially designed prgms. Respond to: HR Dept, Zacks Investment Research, Inc., 155 N. Wacker Dr, Chicago, IL 60606.

SAP Consultant sought by Software Dvlpmt and Consulting Co. in Des Plaines, IL, for job locs throughout US. Must have Bach or equiv in Comp Sci & 4 yrs exp in SAP s/ware dsgn/dvlpmt & SAP certification. Respond to: HR Dept, Softlogics Corporation, 3158 River Rd, Ste 31, Des Plaines, IL 60018.

Software Engineer. Research, design, develop, and implement Network Technology. Analyze software requirements to determine feasibility and implementation of LAN/WAN design. Evaluate interface between software and hardware and performance requirements of overall systems. Develop remote access protocols. Install and maintain LAN/WAN using TCP/IP, Ethernet, Frame Relay, ATM and DSL. Configure and test a wide range of systems on Cisco hardware. Requires MS in Management Information Systems and 6 mos exp. in the job offered or as a program analyst in network development using Tools mentioned above. Send resume to Joseph Melookaran, JMA Information Technology, 6405 Metcalf, Suite 514, Overland Park, KS 66213

IT Consulting firm seeks Project Manager to Lead technical teams in planning and coordinating systems implementation utilizing RDBS, VB, C++, Translate client needs to software solutions. Schaumburg, IL location. MBA in Ops/MIS required. Fax resume: 847/882-3633.

Computer Operations Manager (Chicago, IL.)--Plan, organize, and direct the adaptation of financial software created for European economics systems for use in the United States. Meet with end-users to identify needs and determine usefulness for U.S. financial institutions and coordinate the efforts of computer programmers using Windows 95, Windows NT, UNIX, OS/2, C, C++, and Java to adapt existing financial software for U.S. economics applications, including loan amortization and tables; credit card issuance; and U.S. accounting practice. B.B.A. in Finance or related area. Fax resume to Vitwat Outenpitak at 312-640-2679 or email: info@centerfi.com

Information Technology Analyst: Establish policies, standards and procedures for creating, managing and improving information resources; develop information management policies for data ownership, reusability, access, security and quality; manage the selection, evaluation and implementation of CASE tool to model business requirements, meta-data repository to store data for business and application systems, data management tools, information directory and reporting tools; integrate data across business areas and build an Enterprise Data Model; provide technical support to project teams implementing physical and logical data modeling; develop data warehouse architecture including data extraction and transformation plan. Duties include use of Oracle, CASE tool, Erwin, Process Modeler, Visio 5, Business Object, Microsoft Project, DB2, Access, and Win NT.

Required: Bachelor's degree in Electrical Engineering or Computer Science. Two yrs. exp. in job offered or two yrs. as Consultant and/or Systems Analyst required. Related occupation must include experience logical and physical data modeling management using CASE tools, Oracle and DB2.

$63,000/yr; 40 hrs./wk.; 9:00 a.m.-5:00 p.m. Two copies of resume Gerald Gulseth; File DWE-ALC #C100942; P.O. Box 7972; Madison, WI 53707-7972. Reference File #C100942.

PROGRAMMER ANALYST/ ADMINISTRATOR to develop detailed programs with system design specifications and MS-Basic to guide system development. Code, test, and upgrade programs to meet client needs. Identify and resolve system operating problems. Learn new systems and recommend and implement system changes. Work with MS Basic, MS-DOS Version 5, MS Word, MS-Excel, and MS-Windows 3.11. Prepare technical documents. Present and train small groups on programs developed. Northeastern Illinois location. Requires B.S. in Electrical and Electronic Engineering or Computer Science. Salary $30,600 per year., 45 hrs/wk 8:30 a.m. - 6:30 p.m., O.T. n/a. Must have proof of legal authority to work permanently in the U.S. Send 2 COPIES OF BOTH RESUME & COVER LETTER TO: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 S. State Street - 7 North, Chicago, Illinois 60605, Attention: Lydia Clarke, Reference # V-IL 20769-E. AN EMPLOYER PAID AD. NO CALLS.

Computer

At Lucent Technologies, we're defining the future of telecommunications. We're looking for individuals with an MS and/or 1-2 years of directly related experience in: Software Development, Software Engineering, Database Engineering, Software Architecture, Software Testing, System Administration & Integration, Electrical Engineering, RF Engineering, IS Managers, IS Analysts (Oracle Development/Applications, Network C++/WinNT Development), UNIX Systems Administrators, Network Analysts and Phrase Development Analysts. We seek expertise in the following: CDMA, C/C++/UNIX, Switching Technology, RDBMS, GUI Design, Internet/Network Protocols, Wireless Telecommunications, Software Tools and Object Oriented Methodologies/ SmallTalk.

Please send your resume for our review to: Lucent Technologies, Inc., Scanning Operations, Attention: 63/100499/ND, 283 King George Road, Warren, NJ 07059. EOE.

Data Processing Administrator. 40 hrs/wk, 8:30 am - 5 pm. Salary: $30,596.80. Min. req. bachelor's degree with the major in electronic engineering or computer science. Duties: Establish, develop, implement and maintain computer database of congregation members for Catholic Church parish in Chicago, IL for fundraising, the collection of pledges, budgetary matters, and financial reports to the Archbishop's office; manage and maintain network of 5 computers; create instruction manuals and administrative forms and provide training to parish staff and volunteers on computer software apps including Lotus Smart Suite & MS Office 97. Must have proof of legal authority to work permanently in the U.S. Send resumes to: IL DEPT. OF EMPLOYMENT SECURITY, 401 S. State St. - 7 North, Chicago, IL 60605, Attn: Joan Sykstus, Ref. # V-IL 20479-S. AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Applications Engineer sought by Chelmsford, MA based Co. involved in Automated Mfg Systems. Must have MS in CS, EE, MBA or related & 1 yr exp in analysis & dvlpmt of robotics applics. Respond by resume to: Rita Pierce, HR Dept, Micro Robotic Systems, Inc, 25 Industrial Ave, Chelmsford, MA 01824.

Systems Analyst sought by Clothing & Accessories Mftr in North Bergen, NJ. Must have BS in Comp Sci & Math or Engg & 2 yrs exp planning, dvlpg, testing & documenting functional & technical flow of business process; dvlpg stored procedures & triggers using Oracle d/base; dvlpg user interfaces using Oracle Forms & dvlpg EDI interfaces. Respond to: Liz Claiborne, Inc, Attn: Jeffrey Slemmer, Info Systems Recruiter, One Claiborne Ave, North Bergen, NJ 07047.

Project Director - Plan, direct and coordinate activities of computer professionals in multi-tiered client/server and multi-user software application projects in AS400, RPG/III/ILE, COBOL 400, V3R7, MS Access, OS400, UNIX etc. environments. Min. 3 years experience in position offered or related position with same duties and MS degree in Mathematics, Computer Science or a related field. Salary $80K/yr. Send resume to: Primetech Solutions, 5390 Peachtree Ind. Blvd., Suite 210B, Norcross, GA 30071.

Senior Software Engineer - Project Leader, wanted by Chelmsford, MA based Co. dealing in production of Automated Mfg Systems. Must have MS in CS, EE or related (or equiv BS w/5 yrs progressive exp) & 1 yr exp in dsgn & dvlpmt of electrical controllers for mfg system. Respond by resume to: Rita Pierce, HR Dept, Micro Robotic Systems, Inc, 25 Industrial Ave, Chelmsford, MA 01824.

Software Engineer: To dsgn, test & maintain comp. s/ware sys. for mfg & business solutions using C/C++, SQL Server/ORACLE RDBMS on Windows & UNIX envrmts. Analyze s/ware req. to determine feasibility of dsgn & perform test engg tasks to check for validity of s/ware applics. $72K/yr, 40hr/wk, Atlanta, GA. Must have MS in Engg or Comp Sci. Resume to President, Advantek Enterprises, Inc, 945 N. California Ave, Palo Alto, CA 94303.

Network Engineer (multiple positions) to design, implement, administer & maintain networks using Windows & TCP/IP; Reqs. Bach. in Comp. Sci., Systems Analysis, Comp. Info. Systems, Comp. Engg., Electrical or Electronic Engg., Electronics & Communications or Mathematics or its foreign educ equiv plus 1 yr exp in the job offered; $60,545/yr, 40 hrs/wk 8a-5p. Send resume or C.V. to The Phila. Job Bank, 444 N. 3rd St - 3rd Fl., Phila, PA 19123, J.O. #9100214

Intermediate Analytic Applications Developer & Analyst sought by Marketing Mgmt Systems Co. in Boston, MA. Must have Bach degree in Quantitative field and 2 yrs database dsgn & dvlpmt experience. Respond by resume to: HR Dept, Exchange Applications, 89 South St, Lincoln Plaza, Boston, MA 02111.

Programmer/Analyst: Design, code, and test computer softwares for multiple operating systems (Unix and Windows NT) using C/C++ or other object oriented languages in cross-platform environment. Req. M.S. or equivalent in CS or CIS; Proficiency in C/C++, SQL, TCP/IP, and Oracle on Unix and Windows NT. $60,000 per year; 40 hrs/wk, 8:00 a.m. to 5:00 p.m. Contact: Lori Hall of Iqxpert, Inc. at 5500 Interstate North Parkway, Suite 507, Atlanta, Georgia 30328-4662, fax: 770-953-1574

Database Administrators needed in VA for NJ IT Co to install and upgrade Oracle servers. Apply to Global Consultants, 601 Jefferson Rd, Parsippany, NJ 07054.

Senior Network Engineer/Analyst

Required Senior Network Engineer/Analyst with skills in Unix administration. Should have knowledge of web servers, Firewall, Lotus Notes, Workgroup softwares and ecommerce systems. IP Firewall technologies (Firewall-1 v3.x and above), UNIX (Solaris), TCP/IP networking, DNS, HTTP, SSL. Security aspects of Web servers and Web applications. TRAVEL REQUIRED. Please send us your resume to careers@sdiworld.com or to SDI TECHNOLOGIES, 200 Highpower Blvd., Suite 404, Pittsburgh, PA 15205.

Integrated Computer System Management, Inc.
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a. Oracle DBAs
b. Visual Basic, Power Builder, w/Oracle or other RDBMS's
c. COBOL/400, RPG/400, CL/400, DB2/400, SQL/400
Apply w/resume to:
Attn: Recruiter
1637 A Hillside Ave, New Hyde Park, NY 11040
Fax: (516) 616-4199, E-mail: Resumes@icsm.com

Systems Analyst, Westwood, MA: Analyze, design, develop and implement Client/Server and Oracle Financial HR Functional applications using Oracle General Ledger, HR Admin. and Security of Oracle application Library; BPR techniques, Oracle DB on VAX/VMS, UNIX, Windows NT/95 platforms. Req'd. M.S. in Buss. Mgmt. Or Comp. Sci.1 yr exp. in job offered 40 hrs/wk, 9:00a.m-6:00pm. $62,899.20/yr. Submit two (2) copies of his/her resume in response to: Case #19982219, PO Box 8968, Boston, MA 02114.

Network Analyst needed by International Trading Co. located in NYC. Must have Bach in Comp Sci, Info Tech, Interactive Telecom or related and a minimum of 6 mos exp assisting in planning and dsng LAN and PC network sytm for Japanese clients, mgmt of remote LAN dial sytm and operation on PC Japanese laptop configuration. Test and evaluate new Japanese hardware and software to determine efficiency. Send resume to: Personnel Department MIC 520 Madison Ave, NY, NY 10022.

Computer Consultant needed to install & configure s/ware, create d/base, prfm troubleshooting. Use Win NT, SQL Server, TCP/IP. Bachelor's in Comp Sci or related field & 1 yr exp req'd. Mail res to Morse Business Machines, 1 Division St., Tarrytown, NY 10591.

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Software Consultant: 40 hours/week; 8:00 a.m. to 5:00 p.m.; $50,000 per year. DUTIES OF JOB: Programmer analyst to provide software consulting services to clients consisting of designing and coding computer programs for IBM mainframe in COBOL and related languages and for personal-computer applications; duties will include planning, developing, designing, coding, testing, reviewing and documenting a wide range of mainframe computer programs, and programs for personal computers, utilizing the following tools: VS COBOL II (Virtual Storage Common Business Oriented Language II), MVS/ESA (Multiple Virtual Storage/Enterprise Systems Architecture), IMS (Information Management Systems), CICS (Customer Information Control Systems), DB2 (Databases such as Database 2 of IMB), JCL (Job Control Language), ISPF (Interactive System Productivity Facility), TSO (Time Sharing Option), REXX (Restructured Extended Execution), VSAM (Virtual Storage Access Method) and ALF (Assembly Language Programming) for Intel Processor and IBM Mainframe. Education Required: Bachelors degree in Computer Science. Experience Required: 1 year of experience in job offered or as software engineer, software analyst or programmer analyst. Special Requirements: Able to design and program software in COBOL. Send resumes to MJC/ESA, P.O. Box 11170, Detroit, Mich., 48211-1170. Reference No. 51699. Employer Paid Ad.

Programmer Analyst - Legacy Systems (AS/400) - Multiple Openings

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10:00am	**Sponsor Showcase/Coffee Break**
10:45am	***General Session:*Sourcing Techniques** Cathy Peterson, Romac International
12:00pm	***Luncheon Keynote:* Immigration Issues** Harry J. Joe, Esq., Jenkens & Gilchrist
1:30pm	***General Session:* Silent Impact: The Basic Tenets of Staffing & Bottom Line Effects** Dan Hanyzewski, Mastech Corp.
2:45pm	**Sponsor Showcase/Coffee Break**
3:30pm	***General Session:* Cutting Edge Tools for the Internet Recruiter** Dr. Bret Hollander, NETRECRUITER
5:00pm	**Program ends**

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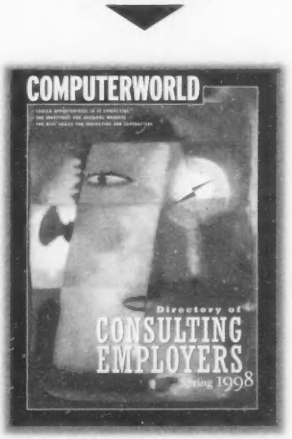

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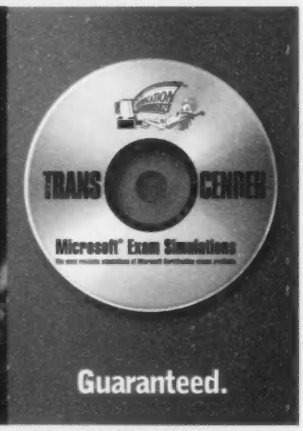

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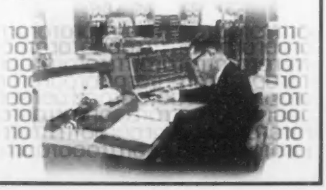

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AOL Will Still Dominate ISPs

EarthLink/MindSpring hopes to challenge AOL

BY BOB RAWSON

RECENT EVENTS have some analysts saying the U.S. Internet service provider market is undergoing a fundamental change.

But Wall Street appears confident that America Online Inc. (NYSE:AOL) doesn't have to worry about its dominant position — yet.

INDUSTRY ALMANAC

On Sept. 23, EarthLink Network Inc. (Nasdaq:ELNK) in Pasadena, Calif., and MindSpring Enterprises Inc. (Nasdaq:MSPG) in Atlanta announced plans to merge early next year. With 3 million subscribers, the combined company will be the nation's second-largest Net access provider.

The merger changes the competitive situation among Internet service providers, as the combined EarthLink/MindSpring entity pitches itself as an alternative to AOL, according to a Morgan Stanley report by analyst Jeffrey Camp. Camp points out that both EarthLink and MindSpring focus on quality customer service, and he praises their plans to launch a $300 million marketing campaign designed to sign up an additional 5 million subscribers by 2001.

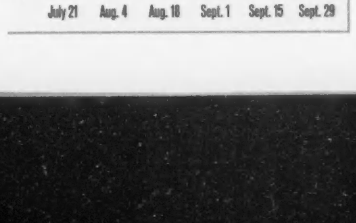
EarthLink and MindSpring have tended to appeal to "graduates" of AOL and other Internet service providers, but if they can build a big enough name, they might compete with AOL for 'net newbies, says Kate von Goeler at Cahners In-Stat Group in Newton, Mass.

In another development that could affect AOL, free-access provider NetZero Inc. (Nasdaq:NZRO) launched an initial public offering Sept. 24, raising the specter that companies that provide free access to the Internetcould challenge providers that charge fees. The Westlake Village, Calif., company priced its 10 million shares at 16, but the stock closed its first day of trading at 29 1/8.

But free providers address "budget-oriented people who don't want the ease of use and content America Online has to offer . . . and never would have bought America Online anyway," says Ulric Weil at Friedman, Billings, Ramsey & Co. in Arlington, Va., who maintains a Buy rating on AOL. ◗

AOL Contenders

EarthLink/MindSpring stocks stay strong as they plan merger to become the No. 2 ISP. But they don't threaten AOl yet.



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SOFTWARE UP 0.2%						
ADBE	114.69	30.00	Adobe Systems Inc. (H)	111.75	3.38	3.1
ARBA	198.62	61.00	Ariba Inc. (H)	155.88	8.13	5.0
AZPN	26.75	6.12	Aspen Technology Inc.	10.00	0.38	3.9
ADSK	49.43	21.00	Autodesk Inc. (L)	21.00	1.00	4.5
AVID	34.25	11.06	Avid Technology	13.69	0.19	1.4
BMCS	71.87	30.00	BMC Software Inc. (H)	66.88	1.50	2.3
BOBJ	62.75	6.12	Business Objects S.A. (H)	57.50	1.50	2.7
CDN	36.99	9.12	Cadence Design Systems	33.13	0.56	4.1
CBTSY	30.50	6.88	CBT Group Plc	24.56	0.69	2.9
CHKP	99.50	10.87	Checkpoint Software Tech. Ltd.	84.38	0.63	0.7
CTXS	69.93	23.12	Citrix Systems Inc.	60.50	2.38	3.8
COGN	28.12	14.75	Cognos Inc.	25.50	3.50	15.9
CA	62.50	30.37	Computer Assoc. International Inc.	57.66	2.13	3.8
CPWR	40.00	16.37	Compuware Corp.	25.94	2.69	8.4
DCTM	54.12	9.37	Documentum	23.00	1.00	4.5
EFII	64.62	15.12	Electronics For Imaging	52.00	4.13	7.3
HNCS	41.50	13.75	Hnc Software	40.56	4.56	12.7
HYSL	36.12	9.87	Hyperion Software	21.25	0.75	3.7
IDAC	53.25	12.43	IDX Systems	18.38	1.87	9.8
INFA	65.00	19.00	Informatica Corp.	54.06	3.44	6.8
IFMX	14.00	3.75	Informix Software Inc.	7.81	0.06	0.8
INTU	37.00	12.12	Intuit (H)	29.25	2.06	6.6
JKHY	55.00	26.43	Jack Henry Associates	36.50	2.50	10.6
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MANU	17.37	5.25	Manugistics Group Inc.	10.00	0.25	2.6
MENT	15.06	5.43	Mentor Graphics	8.75	0.50	6.1
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SCUR	29.00	2.25	Secure Computing Corp.	3.13	0.06	2.0
SE	46.43	18.50	Siebel Systems Inc. (L)	18.75	0.38	2.0
SSW	30.62	18.12	Sterling Software Inc.	20.19	0.25	1.2
SDRC	23.43	7.50	Structural Dynamics Research	15.81	1.19	8.1
SYBS	13.43	4.50	Sybase Inc.	11.69	0.31	2.7
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T	64.12	37.50	AT&T	61.69	1.13	1.9
BCE	52.68	25.62	BCE Inc.	48.69	2.25	4.8
BEL	68.18	47.75	Bell Atlantic (H)	66.25	1.81	2.8
BLS	51.37	36.62	Bell South	45.38	1.31	3.0
CSN	29.50	8.50	Cincinnati Bell Inc.	20.31	1.75	9.4
CMCSK	47.56	19.62	Comcast	38.38	4.19	12.2
CQ	39.62	25.75	Comsat Corp.	29.06	1.94	7.1
COX	44.43	23.93	Cox Communications Inc.	42.44	3.31	8.5
GSTRF	33.00	8.31	Globalstar Telecom. Ltd.	22.69	2.06	9.0
GTE	78.50	53.93	GTE Corp.	75.63	1.81	2.5
NXTL	76.00	15.37	Nextel Communications	68.00	3.50	5.4
SPOT	45.62	26.37	Panamsat	35.06	3.94	10.1
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NDC	55.25	23.68	National Data (L)	25.31	0.94	3.8
PAYX	36.75	22.56	Paychex Inc.	33.63	1.19	3.7
PER	85.75	17.62	Perot Systems Corp. (L)	15.63	0.56	3.1
RENU	14.75	3.68	Renaissance Worldwide	3.88	0.19	4.6
REY	25.31	16.12	Reynolds & Reynolds	19.06	1.81	8.7
SFE	109.00	17.12	Safeguard Scientifics	69.00	1.00	1.4
SAPE	108.75	24.25	Sapient Corp. (H)	88.00	2.75	3.0
SMS	73.50	40.06	Shared Medical Systems	45.13	0.13	0.3
SDS	41.93	21.37	Sungard Data Systems	24.31	0.88	3.7
SYNT	22.75	7.00	Syntel Inc.	9.06	0.94	9.4
TECD	50.50	14.50	Tech Data	24.44	1.81	6.9
TENF	39.50	21.50	TenFold Corp.	27.50	2.25	8.9
TSS	26.25	14.12	Total System Services Inc (L)	16.06	1.31	8.9
TSAI	51.00	24.18	Transaction Sys. Architects	26.00	0.13	0.5
NETWORK UP 0.5%						
COMS	51.12	20.00	3Com Corp.	28.69	1.69	6.3
ADCT	53.62	16.75	ADC Telecommunications Inc.	40.25	0.25	0.6
ANTC	55.25	11.50	Antec (H)	52.88	5.44	11.5
BNYN	19.37	2.75	Banyan Systems Inc.	10.00	1.13	12.7
CS	19.93	7.18	Cabletron Systems	15.56	1.06	6.4
CNFR	9.75	2.93	Call Net Enterprises	5.38	0.06	1.1
CSCO	73.56	20.56	Cisco Systems Inc.	67.50	1.38	2.0
ECIL	45.00	19.75	ECI Telecom	24.56	2.44	9.0
ENTU	43.06	9.00	Entrust Technologies Inc.	20.13	2.44	10.8
HNIS	40.62	21.62	Harris Corp.	27.75	0.19	0.7
GMH	63.87	30.37	Hughes Electronics/GM	58.50	1.25	2.2
ERICY	35.25	15.00	LM Ericsson	31.00	0.25	0.8
JNPN	234.37	30.12	Juniper Networks Inc.	197.50	8.88	3.6
LU	79.75	26.68	Lucent Technologies	62.44	2.38	3.7
MADGF	5.38	1.75	Madge Networks	2.16	0.22	9.2
NCSI	8.50	4.25	Network Computing Dev.	4.75	0.13	2.6
NWK	13.68	7.31	Network Equipment Tech.	8.13	0.31	3.5
NN	39.87	15.43	Newbridge Networks	25.75	0.88	3.3
NOK	99.37	29.50	Nokia Corp.	90.44	2.00	2.3
NT	51.87	13.37	Northern Telecom Ltd. (H)	49.94	2.44	7.4
PAIR	16.12	8.00	Pairgain Technologies Inc.	13.50	1.69	14.3
PCTL	11.00	2.62	Pictureltel (L)	4.50	0.38	9.1
SFA	58.81	11.75	Scientific Atlanta	47.50	0.94	1.9
TLAB	74.00	15.68	Tellabs Inc.	56.56	1.81	3.1
USW	66.00	51.12	US West	56.81	2.75	5.1
VRLN	6.28	2.00	Verilink	2.31	0.00	0.0
WSTL	11.18	2.75	Westell Technology Inc.	7.88	0.25	3.1
SEMICONDUCTORS, CHIPS & EQUIPMENT UP 0.8%						
ADPT	42.87	7.81	Adaptec	39.44	5.56	16.4
AMD	33.00	9.31	Advanced Micro Devices	17.50	0.00	0.0
ALTR	55.68	14.75	Altera	44.63	2.59	5.6
ADI	60.43	32.00	Analog Devices	52.13	2.63	5.0
AMAT	84.93	21.56	Applied Materials	79.25	1.50	1.9
ASML	69.62	12.93	ASM Lithography Holding	67.38	2.75	4.3
HRS	80.62	23.62	Harris Corp.	27.75	0.19	0.7
INTC	89.50	38.00	Intel Corp.	74.44	0.75	1.0
KLAC	74.50	20.75	Kla Instruments	66.81	3.94	1.4
LLTC	75.75	19.56	Linear Technology	60.00	4.75	7.3
LSI	62.50	10.50	LSI Logic	53.44	0.44	0.8
MXIM	78.87	22.31	Maxim Integrated Products	68.75	1.19	1.7
MU	85.00	23.43	Micron Technology	70.69	7.94	10.1
MOT	100.18	38.37	Motorola	86.81	2.63	3.1
NSM	36.25	7.43	National Semiconductor	31.75	0.13	0.4
STM	81.37	17.93	SGS-Thomson Microelectronics	77.12	1.38	1.8
SLR	78.93	21.12	Solectron Corp.	71.69	3.56	5.2
TER	42.25	7.50	Teradyne	38.56	0.31	0.8
TXN	93.43	22.68	Texas Instruments	86.50	4.50	5.5
VSH	121.50	15.62	Vishay Inter (H)	113.25	4.88	4.5
WFSG	97.50	17.12	Vitesse Semiconductor Corp.	83.63	0.75	0.9
XLNX	77.25	15.43	Xilinx	67.00	2.38	3.7
COMPUTER SYSTEMS UP 0.0%						
AAPL	80.12	28.50	Apple Computer Inc.	60.50	5.06	7.7
ASPX	13.31	1.62	Aspex Systems	9.25	0.50	5.7
BEOS	10.93	5.87	Be Inc.	7.06	0.44	6.6
CPQ	31.75	20.00	Compaq	22.38	0.38	1.6
DGN	21.81	9.00	Data General	21.38	1.38	6.9
DELL	55.00	20.37	Dell Computer Corp.	41.88	2.13	4.8
GTW	54.75	18.06	Gateway 2000 Inc.	46.69	3.63	8.4
HWP	118.43	47.06	Hewlett-Packard Co.	87.06	8.63	9.0
HIT	114.87	40.31	Hitachi Ltd.	106.94	2.06	1.9
IBM	139.18	58.37	IBM	117.56	5.94	4.8
MUEI	24.75	9.06	Micron	10.19	1.69	15.5
MOT	100.18	38.37	Motorola	86.81	2.63	3.1
NATI	48.25	17.50	National Instruments Corp.	32.88	3.25	11.0
NCR	55.75	26.25	NCR	31.69	1.19	3.9
NIPNY	106.00	31.00	NEC	100.13	1.19	1.2
PRCM	13.25	3.43	Procom Tech Inc.	7.44	0.31	4.0
SQNT	19.00	5.56	Sequent Computer Systems	18.00	0.13	0.7
SGI	29.87	7.37	Silicon Graphics Inc (L)	10.88	0.13	1.1
SNE	160.50	60.25	Sony	154.94	5.88	3.9
SUNW	95.75	19.50	Sun Microsystems (H)	91.88	2.25	2.5
TWCD	4.87	0.37	Tricord Systems	3.63	0.25	7.4
UIS	49.68	18.12	Unisys	43.50	1.50	3.6
INTERNET UP 3.3%						
AMZN	110.62	13.37	Amazon.com	77.50	12.88	19.9
AOL	175.50	20.62	America Online	106.69	11.00	11.5
ATHM	99.00	17.25	Athome Corp.	44.19	7.75	21.3
CKFR	69.12	5.75	Checkfree	40.50	5.06	14.3
CYCH	24.87	5.87	Cybercash Inc.	7.50	0.06	0.8
EDFY	16.87	3.81	Edify Corp.	11.94	0.13	1.1
EBAY	234.00	9.42	eBay Inc.	198.44	5.38	3.7
ETYS	85.00	28.12	eToys Inc.	59.63	7.63	12.9
EGRP	72.25	2.50	ETrade Group Inc.	22.94	0.38	1.7
SEEK	100.00	16.62	Infoseek	30.75	2.69	9.6
LCOS	72.68	11.25	Lycos Inc.	49.63	4.06	8.9
OMKT	27.00	4.25	Open Market Inc.	12.91	0.13	1.0
OTEX	42.50	10.00	Open Text Corp.	19.88	1.00	4.8
PCLN	165.00	53.50	Priceline.com Inc.	63.25	2.94	4.4
PRGY	50.62	14.00	Prodigy Communications	16.88	0.75	4.3
PSIX	23.75	8.37	PSINet Inc.	15.19	3.50	9.0
SDTI	30.62	5.43	Security Dynamics	27.31	0.00	0.0
SPYG	32.25	9.62	Spyglass Inc.	11.94	0.19	1.6
YHOO	244.00	46.75	Yahoo Inc.	174.00	4.75	2.7
STORAGE & PERIPHERALS UP 3.0%						
ADPT	42.87	7.87	Adaptec Inc.	39.44	5.56	16.4
APCC	27.75	13.12	American Power Conversion	18.69	0.56	2.9
CANNY	93.62	17.00	Canon Inc.	28.08	0.82	3.0
DBD	39.87	19.12	Diebold Inc.	23.19	1.56	8.3
EK	85.31	60.81	Eastman Kodak Co.	74.88	1.69	2.3
EMC	75.62	20.81	EMC	72.19	3.06	4.4
IOM	10.18	2.93	Iomega	3.44	0.31	10.0
MXTR	21.25	4.25	Maxtor Corp.	6.44	0.84	15.1
NTAP	72.87	16.00	Network Appliance Inc.	70.38	0.88	1.2
LXK	87.25	25.37	Lexmark International Group Inc.	80.38	3.38	4.0
SEG	44.75	19.81	Seagate Technology	30.62	1.44	4.9
STK	41.62	17.25	Storage Technology	19.88	0.69	3.4
TEK	69.37	13.68	Tektronix	33.88	2.25	7.1
XRX	62.93	40.37	Xerox	41.75	1.31	3.0

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

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Oracle Help

were below expectations.

All the changes being made by Oracle are finally starting to have a positive impact, according to some attendees at last week's fall conference of its independent applications user group. For example, several users said they usually spend just a few minutes on hold waiting for telephone support now — down from 30 minutes or more earlier this year.

But in several conference sessions, users said some calls are still answered by inexperienced workers who are reluctant to refer questions about the ERP applications to Oracle's support managers.

"It's really a case-by-case experience, depending on which [support] analyst you get," said Don Payne, vice president of information systems at Integrated Measurement Systems Inc. in Beaverton, Ore. Even experienced support workers sometimes "don't want to help you," he said.

But Payne — who is executive vice president of the Oracle Applications Users Group (OAUG) and chairman of its support council — added that he's encouraged by the faster call pickup times. A new online support system that lets users submit bug-fix requests via the Internet also looks promising, Payne said.

"I work with [Oracle's support organization] a lot, and I really think they've come a long way in the last six months," said Eddy Paul, a business systems administrator at Montreal-based Air Liquide Canada Inc. In addition to reducing hold times, Oracle seems to have cut the turnover rate among its support workers, Paul said.

But he added that users may have to be proactive to get their problems resolved. Paul said he calls back within hours to check on the status of bug fixes. "I'm a pain the neck," he said.

At the spring OAUG conference, Oracle said it was hiring more applications support workers, setting up regional support groups and adding the online system for requesting help [News, April 26]. Moves detailed last week include plans to increase the amount of bug-fix data available online and then to replace the current support system with more advanced Internet-based software that routes problems to the right Oracle developers and tracks each user's system configuration.

Randy Baker, executive vice president of support services at Oracle, said his goal is to increase applications support productivity by 30% in the next six months. Performance metrics tracked by Oracle are moving "slower than I'd like them to, but the trends have all been going in the right direction," he added.

Joe Dorsey, manager of information systems at Watkins-Johnson Co. in Palo Alto, Calif., said bug fixes that he has received from Oracle recently "have actually solved problems, where in the past they didn't even come close to helping us." Support workers now take more time to drill down into issues, he added.

But there are still some gaps. For example, Debi Schrader White, a consultant in Brush Prairie, Wash., said a support analyst she recently dealt with couldn't help solve her problem. "I waited for two days to give her a chance, but it was clear to me that I knew more than she did," White said.

Direct Upgrade

Many users running Oracle's green-screen applications want to bypass the company's first Web-only release and upgrade directly to a second version, expected in February. And Oracle is doing all it can to make that possible.

At last week's OAUG conference, Oracle said its automated upgrade tools will support that kind of leap to the upcoming Release 11i software. Technical support for its last green-screen release is also being extended into 2001 so users can wait for the arrival of 11i, as expected [News, Sept. 27].

– Craig Stedman

Novell Pushes NDS Via Services Pact

$100M investment in integrator part of 'strategic initiative'

BY DAVID ORENSTEIN

IN THE HOPE of pushing its directory software into corporate server rooms, Novell Inc. last week announced a $100 million investment in integrator Whittman-Hart Inc.

Novell will own 6% of the Chicago-based firm. Under the partnership, the companies will develop applications using Novell Directory Services (NDS) for midsize businesses, officials of both companies said.

Novell plans further similar investments as part of its "strategic services initiative," but Richard Nortz, Novell's senior vice president of customer service, declined to specify future partners.

Whittman-Hart Chairman Robert Bernard said he expects the company to begin offering products from the alliance within 90 days.

To reach the enterprise applications and management platform role to which it aspires, Novell needs to invest in integrators that will take its products beyond their core capabilities in file and print serving, said analyst Steve Kleynhans at Stamford, Conn.-based Meta Group Inc.

"Their channel resellers have continued to do the same things they were doing 10 years ago," Kleynhans said.

Novell's flagship NetWare product hasn't traditionally been a good application server platform, he said. NDS, meanwhile, has required a lot of explanation and evangelical selling because it was unique for a long time, Kleynhans said.

Novell last week landed a large customer for its Border Manager firewall. Los Angelese-based Twentieth Century Fox Film Corp. will use the software to protect a worldwide virtual private network spanning 34 offices worldwide.

Continued from page 1

Service Debuts

nesses away from having to buy computers."

Companies must sign up for the service for three years. CenterBeam has more than $20 million in financial backing from Microsoft Corp. and USWeb/CKS in San Francisco, among others.

CENTERBEAM'S SHELDON LAUBE plans to target enterprise with service

One of CenterBeam's first customers, Alexander Schilling, president of Tangent Funds Management LLC in San Francisco, said he figures his company will cut its IT costs by more than 20% using the service. It will also cut out the significant headaches associated with buying, installing and upgrading PCs for the company's 15 employees.

"We were faced with upgrades to our internal systems, plus hosting a Web site, and we really didn't want to be in the computer business," Schilling said.

CenterBeam equipped Tangent with a high-speed Digital Subscriber Line connection that links the company to an enterprise data center in Santa Clara. Employees' PCs run Windows 2000 and Microsoft business applications. The PCs also are linked locally over a wireless LAN, eliminating the need to pull cable at users' sites.

Users also have around-the-clock access to a technical support team dedicated to their company.

In the coming months, CenterBeam also expects to form partnerships with several application service providers to help users tap into rented Web-based software applications.

At $165 per user per month, the service should be a major hit with small and midsize companies, said Virginia Brooks, an analyst at Aberdeen Group Inc. in Boston. But she said she has her doubts about it catching on soon with larger companies, where networking organizations have evolved into powerful fiefdoms. "Look how many companies we saw hold on to the mainframe long after they should, simply because the mainframe guy wouldn't let go," Brooks said.

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- Microsoft Office applications service and support

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FRANK HAYES/FRANKLY SPEAKING

Out to lunch

THE OLD MAN was on the phone when Murchnick knocked on the open door of his office, but he waved the sales manager toward a chair. "All of them," he was saying. "No point taking any chances. If it's not happening already, it'll be starting soon." He hung up.

"So, Murch," the Old Man said, "I hear you've been telling everyone what a great meeting you had with one of our new security consultants. Who was it again?"

"Jeremy McZorro," said Murchnick. "You know, long face, looks like a college kid? That was a great idea, having him take the department managers out to lunch to sell them on security. Nice restaurant, too."

"Mmm," said the Old Man. "So what does he think of our security so far?"

"He's impressed with the firewalls. He thinks we ought to be using encryption. And he made some suggestions about a better password for me. That kid knows his stuff," Murchnick said. "But what he's got me worried about is those contractors."

"You mean the Y2K guys, or the ones from Andersen who were working on the supply-chain system?" asked the Old Man.

"All of 'em. Did you know — he gave me this article — where is it?" Murchnick said, searching his pockets. "Did you know that $30 billion in proprietary information gets ripped off every year? For manufacturers, it's about $50 million per incident. And most of it is leaked by contractors. Here it is," he said, handing the page to the Old Man.

"Mmm," said the Old Man again, reading. "PricewaterhouseCoopers and the American Society for Industrial Security. Those Industrial Security guys are real locks-and-bolts security fanatics, not your usual IT security types. But what it says here is that companies *perceive* on-site contractors and OEMs as the biggest threats to proprietary information."

"Sure, because these guys can get into everything." Murchnick edged forward in his chair and lowered his voice. "Look, what do we really know about these contractors? They could put a back door in this supply-chain system, and they'd know about our backlogs before we do. Sell that dope to our competitors and they'll beat us on every deal."

"They could get sales numbers, what all the customers and suppliers are doing, the whole works. And they could be drilling those holes in the firewalls and digging tunnels under our security right now. I think the kid is right," Murchnick said. "As soon as they're out of here, we need to add some encryption so they won't be able to read whatever they steal."

The Old Man nodded. "So you talked with him about the Y2K contractors and the new supply-chain system, and he recommended a new password for you. Anything else?"

That kid really knows his stuff. He's very thorough.

"I think I got my money's worth out of him just with that," Murchnick said. "But we covered a lot of ground. I've got to make sure my sales guys start locking their laptops better when they're on the road. And maybe we should be locking the Dumpster, too. He said everything isn't getting shredded. That kid really knows his stuff. He's very thorough."

"He does seem to be," said the Old Man. "Did he mention anything about 'social engineering'? Or how easy it is to call up a sales manager, drop a few names to get his confidence, buy him lunch and pump him for information?"

Murchnick stared across the desk blankly.

The Old Man sat back and closed his eyes for a moment. "Murch," he said finally, quietly. "We don't *have* a new security consultant named McZorro." ◗

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

ONE FIBER-OPTIC LINE – severed in a construction snafu – caused mucho grief for United Air Lines ticket agents last week at the San Francisco airport. A friend of the Tank reports that the agents were unable to communicate with the next terminal, let alone the baggage and gate people. Meanwhile, hundreds of passengers stewed – or watched their bags jet off to Denver while they slept on the floor. Guess United decided the wonders of fiber optics make redundancy plans, um, redundant.

IN START-UP LAND, things are just different. An HR pilot fish tells of one Silicon Valley high-flier that's growing so fast it orders truckloads of office furniture blindly. By the time it arrives, there are plenty of newbies to snap everything up. HR simply rolls chairs down the hall, hollers "new chairs!" and watches the scramble. Sheesh. If your shop is anything like Sharky's, the problem isn't seats, it's putting warm rear ends *in* them.

THIS FRIEND of the Tank works for a big decentralized outfit. They've got a mandatory IT peer-recognition program called Catch a Star. So the only IT guy in one particular building sends an e-mail to the boss pointing out that because he's all by his lonesome, it'll be hard for him to "catch" anybody doing anything. The response? Figure out how, or it'll cost you on your review.

CHEERFUL THOUGHTS DEPT. IDC's Internet Executive Forum. Last week. Clayton Christensen – author, Harvard B-School professor, all-around brain – wonders aloud if Merrill Lynch should follow Charles Schwab and go whole-hog into e-trading. After all, "Merrill Lynch is a gorgeous business," Christensen shrugs. "They've probably got another $30 billion in profits to make before all their clients die."

RETAIL IS FOR SUCKERS Somebody at Oracle goofed. Faxed *The Wall Street Journal* a super-secret memo listing the company's 20 largest customers and what kind of discount they got. The *Journal* says four customers beat at least 80% off Oracle's opening price. The champ? A South Korean steelmaker scored a 94% discount. Sounds like renegotiation time to Sharky.

What's the worst you've been hosed by a vendor on a sale? Ever turned the tables and chiseled a killer deal out of your least favorite rep? Spill it, at **sharky@computerworld.com.** And be sure to get fresh Shark every day at *computerworld.com/sharky.*

The 5th Wave

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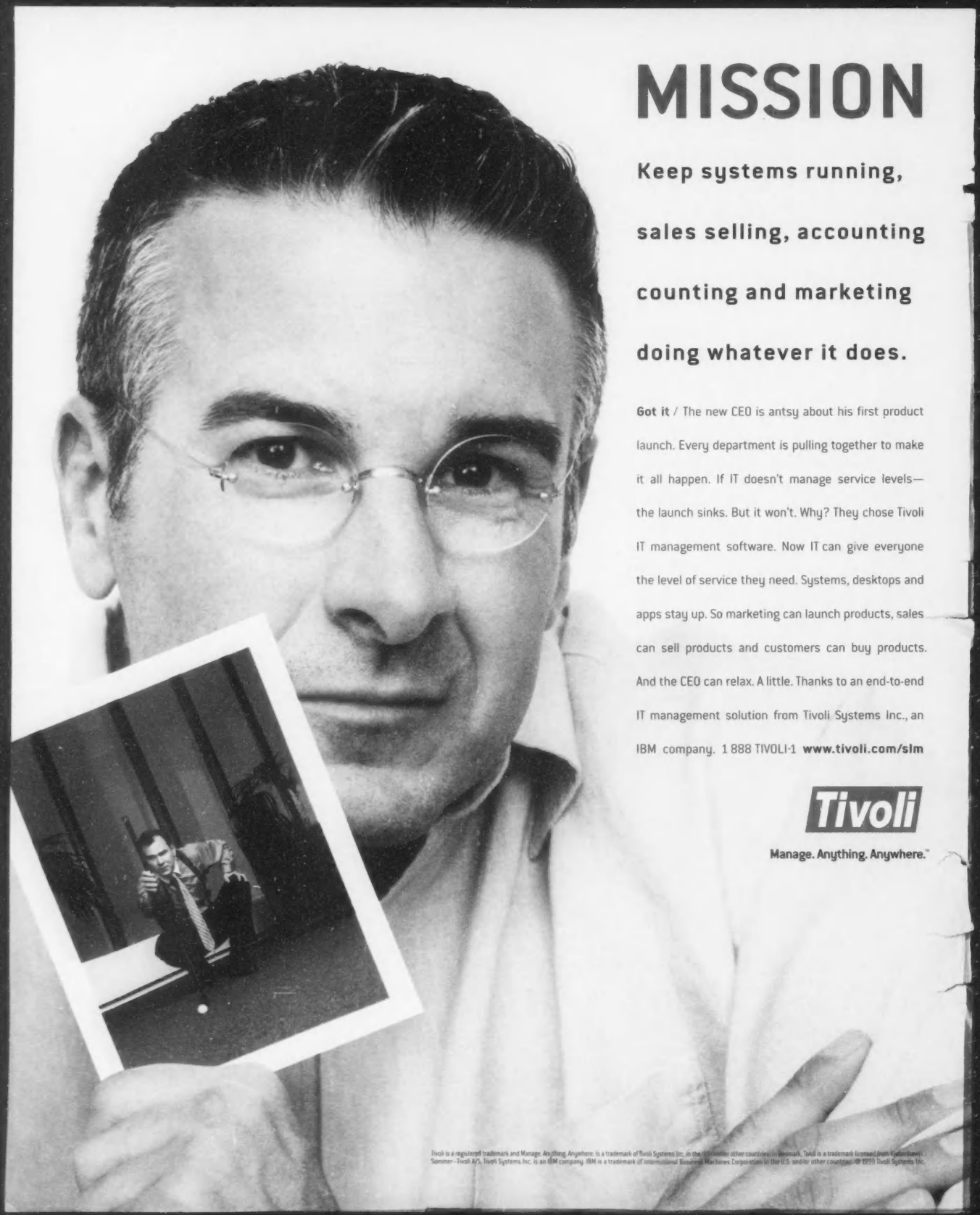

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